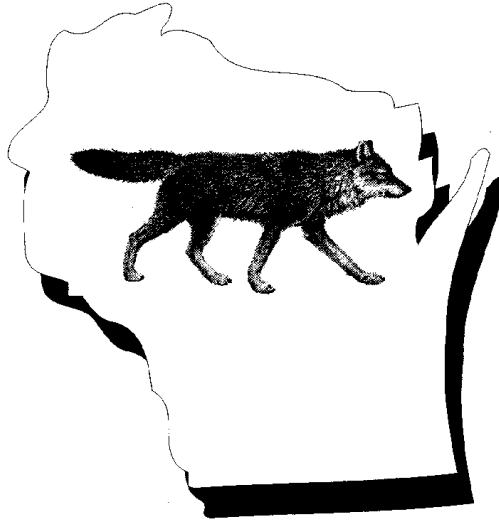


**ENVIRONMENTAL ASSESSMENT
MANAGEMENT OF
WOLF CONFLICTS AND DEPREDATING WOLVES
IN WISCONSIN**



Prepared by:

UNITED STATES DEPARTMENT OF AGRICULTURE (USDA)
ANIMAL AND PLANT HEALTH INSPECTION SERVICE (APHIS)
WILDLIFE SERVICES (WS)

in cooperation with:

WISCONSIN DEPARTMENT OF NATURAL RESOURCES (WDNR)

U.S. FISH AND WILDLIFE SERVICE (USFWS)

U. S. FOREST SERVICE (USFS)

WISCONSIN COUNTY FORESTS ASSOCIATION (WCFA)

GREAT LAKES INDIAN FISH AND WILDLIFE COMMISSION (GLIFWC)

WISCONSIN DEPARTMENT OF AGRICULTURE, TRADE AND CONSUMER
PROTECTION (WDATCP)

LAC du FLAMBEAU BAND OF LAKE SUPERIOR CHIPPEWA

WISCONSIN HO CHUNK

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SUMMARY OF PROPOSED ACTION

The United States Department of Agriculture (USDA), Animal and Plant Health Inspection Service (APHIS), Wildlife Services (WS) in cooperation with the Wisconsin Department of Natural Resources (WDNR) and U. S. Fish and Wildlife Service (USFWS) and in accordance with the Wisconsin Wolf Management Plan (WWMP) (1999) would implement an Integrated Wildlife Damage Management (IWDM) program in Wisconsin to protect resources from wolf damage and promote wolf conservation.

A Wisconsin Wolf Technical Committee drafted a WWMP (1999) which includes a depredation management plan outlining the level of involvement and responsibilities of WS. According to WWMP (1999), WS would investigate wolf depredation complaints within 48 hours of receipt and classify wolf complaints as: 1) confirmed depredation, 2) probable depredation, 3) confirmed non-wolf depredation, and 4) unconfirmed depredation. When confirmed or probable depredations occur, WS would consult with WDNR and, if appropriate, conduct wolf damage reduction actions in accordance with WWMP (1999) and WDNR/WS policies.

The types of wolf damage that WS could be requested to alleviate or prevent include: 1) predation on livestock, 2) predation on pets or property (e.g., other domestic animals), and 3) safety threats to human health and safety. An IWDM strategy would be recommended to cooperators and used by WS personnel. Under the proposed action, WS could provide technical (educational/extension) and operational (direct) damage management to resource owners requesting assistance and experiencing damage caused by wolves. The WS Decision Model (Slate et al. 1992) would be used to develop site-specific damage-reduction strategies, which may incorporate non-lethal or lethal methods depending on the situation and guidance provided in the WWMP (1999).

As part of the IWDM program, WS would provide technical assistance to provide resource owners with information on the use and effectiveness of non-lethal wolf damage management methods. Information transfer could occur in the form of brochures, other written information, personal and telephone consultations, or workshops. WS may also lend equipment such as frightening devices (when equipment is available). Resource owners would be responsible for implementing non-lethal methods and, therefore, WS would have little or no control over the implementation of the recommendations.

WS operational programs would be implemented and conducted under an agreement with the affected resource owner, and in accordance with WS Directives, MOUs with other agencies, Federal and State laws, WWMP (1999) guidelines and the USFWS Final Down listing Special 4(d) Rule (50 CFR 17.40(o)). Operational programs conducted could involve removal of wolves suspected of causing depredations to livestock, pets and property, or causing human health and safety concerns. The methods used by WS could include the use of leg-hold traps, land restraint devices, spring activated foot snares, aerial gunning, calling and shooting. Under the WWMP (1999), live-trapping and relocation of problem wolves if suitable relocation sites exist, and/or live-trapping and euthanasia of problem wolves by government officials, including WS, would be allowed. The current status of the Eastern Distinct Population Segment (DPS) of gray wolves allows for lethal removal of individual wolves under a special 4(d) rule (50CFR17.40 (o)).

WS personnel would strive to minimize adverse effects on non-target animals and the environment by utilizing the most selective, effective, and least-intrusive methods. Preference would be given to non-lethal methods when they are deemed practical and effective. However, non-lethal methods may not always be applied as a first response to each damage problem encountered by WS if the damage problem is chronic or if there are human health and safety concerns. The most appropriate initial response to a wolf damage problem could be a combination of non-lethal and lethal methods or, the use of lethal methods only. When lethal damage management is necessary, wolves would be removed as humanely as

possible using the methods described above. WS may also choose to use newly-developed or experimental tools provided by researchers or other interested parties after consulting with the WDNR or USFWS.

ACRONYMS / ABBREVIATIONS

| | |
|--------|--|
| APHIS | Animal and Plant Health Inspection Service |
| AVMA | American Veterinary Medical Association |
| CDFG | California Department of Fish and Game |
| CE | Categorical Exclusion |
| CEQ | Council on Environmental Quality |
| CFR | Code of Federal Regulations |
| DPS | Distinct Population Segment |
| EA | Environmental Assessment |
| EIS | Environmental Impact Statement |
| EJ | Environmental Justice |
| EPA | U.S. Environmental Protection Agency |
| ESA | Endangered Species Act |
| FDA | Food and Drug Administration |
| FIFRA | Federal Insecticide, Fungicide, and Rodenticide Act |
| FY | Fiscal Year |
| GAO | U. S. General Accounting Office |
| GLIFWC | Great Lakes Indian Fish and Wildlife Commission |
| IPM | Integrated Pest Management |
| IWDM | Integrated Wildlife Damage Management |
| MIS | Management Information System |
| MOU | Memorandum of Understanding |
| NEPA | National Environmental Policy Act |
| SOP | Standard Operating Procedure |
| T/E | Threatened and Endangered |
| USC | United States Code |
| USDA | U.S. Department of Agriculture |
| USDI | U.S. Department of Interior |
| USFS | U. S. Forest Service |
| USFWS | U.S. Fish and Wildlife Services |
| WCES | Wisconsin Cooperative Extension Service |
| WCFA | Wisconsin County Forester Association |
| WDATCP | Wisconsin Department of Agriculture, Trade and Consumer Protection |
| WDNR | Wisconsin Department of Natural Resources |
| WWMP | Wisconsin Wolf Management Plan |
| WRS | Wisconsin Revised Statutes |
| WS | Wildlife Services |

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CHAPTER 1 PURPOSE OF AND NEED FOR ACTION

1.1 INTRODUCTION

During the last 200 years, broad-scale changes in land-use patterns have occurred as the increasing human population settled North America. Notable is the large-scale conversion of natural landscapes to agricultural and urban environments. As humans encroach on wild habitats, they compete with wildlife for space and other resources, which increases the potential for conflicts. Concurrent with this growth and change is a development by some segments of the public to completely protect all wildlife, which can create localized conflicts with resource managers and owners experiencing problems with some species. *The Animal Damage Control Programmatic Final Environmental Impact Statement (EIS)* (U.S. Department of Agriculture (USDA) 1997) summarizes the American perspective of the relationship between wildlife values and wildlife damage, as follows:

"Wildlife has either positive or negative values, depending on varying human perspectives and circumstances . . . Wildlife is generally regarded as providing economic, recreational and aesthetic benefits . . . and the mere knowledge that wildlife exists is a positive benefit to many people. However . . . the activities of some wildlife may result in economic losses to agriculture and damage to property . . . Sensitivity to varying perspectives and value is required to manage the balance between human and wildlife needs. In addressing conflicts, wildlife managers must consider not only the needs of those directly affected by wildlife damage but a range of environmental, sociocultural and economic considerations as well."

Biological carrying capacity is the limit of the land or habitat to support healthy populations of species without long-term degradation of either the health of the species or the associated environment (Decker and Purdy 1988). The wildlife acceptance capacity (also known as cultural carrying capacity) is the limit of human tolerance for wildlife, or the maximum number of a given species that can coexist compatibly with local human populations (Decker and Purdy 1988). These capacities are especially important in areas inhabited by humans because they define the sensitivity of a local community to a specific wildlife species/problem. For any given situation involving a wildlife conflict, individuals directly or indirectly affected by the damage will have varying degrees of tolerance for the damage and the species involved in the damage. The tolerance, or threshold, determines the "wildlife acceptance capacity," which is often lower than the "biological carrying capacity." For example, the biological carrying capacity of gray wolves (*Canis lupus*) in Wisconsin could probably be higher than their current population; however, the wildlife acceptance capacity is lower in some situations. Once the wildlife acceptance capacity of a species is reached or exceeded, humans will demand implementation of programs, both lethal and non-lethal to reduce damage or threats of damage.

Wildlife damage management is a specialized field within the wildlife management profession, is the science of reducing damage or other problems caused by wildlife and is recognized as an integral part of wildlife management (Berryman 1991, The Wildlife Society 1992). During the last 130 years, with settlers migrating west, the introduction of domestic livestock, water development, urbanization, and other modern agricultural and cultural practices, wildlife management has also changed. It is generally recognized that responsible management, not passive preservation, is necessary when managing agricultural and natural resource, or protecting property and human health and safety. Wildlife Services¹ (WS) is the Federal agency directed by Congress to conduct wildlife damage management to protect American agricultural, industrial and natural resources, property and human health

¹ On August 1, 1997, the Animal Damage Control program was officially renamed "Wildlife Services."

and safety from damage associated with wildlife (Act of March 2, 1931 as amended 46 Stat. 1486; 7 USC 426-426c (for additional discussion on legal authorities see Appendix B). WS' mission, developed through its strategic planning process (USDA 1999), is: 1) *"to provide leadership in wildlife damage management in the protection of America's agricultural, industrial and natural resources, and 2) to safeguard public health and safety."* WS Policy Manual² reflects this mission and provides guidance for engaging in wildlife damage management through:

- Training of wildlife damage management professionals
- Research, development and improvement of strategies to reduce losses and threats from wildlife
- Collection, evaluation, and dissemination of management information
- Informing and educating the public on how to reduce wildlife damage
- Providing a source for limited-use management materials and equipment, including pesticides

WS is a cooperatively-funded, service-oriented program that provides assistance to requesting public and private entities and governmental agencies³. Before WS responds to requests for assistance and conducts any wildlife damage management, a request must be received and an *Agreement for Control* must be signed by the landowner/administrator for private lands or other comparable documents are in place for public lands. WS responds to requests for assistance when valued resources are damaged or threatened by wildlife. Responses can be in the form of technical assistance or operational damage management, depending on the complexity of the wildlife problem and the funding that is available. The degree of WS involvement varies, depending on the complexity of the wildlife problem. WS activities are conducted in accordance with applicable Federal, State, and local laws; Cooperative Agreements, "Agreements for Control", Memoranda of Understanding (MOUs), and other applicable documents (WS Directive 2.210). These documents establish the need for the requested work, legal authorities allowing the requested work, and the responsibilities of WS and its cooperators.

WS uses an Integrated Wildlife Damage Management (IWDM) approach to resolve wildlife-related conflicts. This strategy, also known as Integrated Pest Management (IPM), is described in USDA (1997). In short, IWDM seeks to prevent, reduce, or stop wildlife damage by integrating a combination of methods sequentially or concurrently. These methods may include alteration of cultural practices, habitat manipulation, or behavioral modification of the offending species or the humans involved. Implementation of IWDM may also require the dispersal or relocation of offending animal(s), or the reduction of the local populations by lethal means. WS uses the WS Decision Model (Slate et al. 1992) to determine how IWDM will be conducted. This approach allows IWDM strategies to be customized for each wildlife/human conflict that is encountered by WS personnel.

This environmental assessment (EA) documents the potential impacts to the human environment of the proposed Wisconsin WS wolf damage management program that would be conducted to reduce damage/losses and achieve a balance between the biological and wildlife acceptance capacities in cooperation with the Wisconsin Department of Natural Resources (WDNR) and U.S. Fish and Wildlife Service (USFWS), U. S. Forest Service (USFS), Wisconsin Department of Agriculture, Trade and Consumer Protection (WDATCP), Great Lakes Indian Fish and Wildlife Commission (GLIFWC), and Tribal governments. This analysis relies mainly on existing data contained in published documents (Appendix A), including (USDA 1997), The Eastern Timber Wolf Recovery Plan (USFWS 1992), and the WWMP (1999) whereby pertinent portions of these documents are incorporated by reference. The

² WS' Policy Manual provides guidance for WS personnel to conduct wildlife damage management activities through Program Directives. WS Directives referenced in this EA can be found in the manual but will not be referenced in the Literature Cited Appendix.

³ The State of Wisconsin has the primary responsibility for wildlife management and could conduct wildlife management related activities without WS assistance. This wolf damage management effort however would be facilitated by WS providing assistance to ensure more timely response to wolf complaints and provide for more effective wolf conservation (Fritts 1993, 50 CFR 17.40(o)).

Council on Environmental Quality (CEQ) regulations for implementing NEPA authorize agencies to eliminate repetitive discussions of issues addressed in USDA (1997) (CFR 1500.4(i), 1502.20); thus, pertinent analyses in USDA (1997) are incorporated by reference by integrating relevant discussions and analysis. USDA (1997) may be obtained by contacting the USDA, APHIS, WS Operational Support Staff at 4700 River Road, Unit 87, Riverdale, MD 20737-1234.

Normally, individual wildlife damage management actions could be categorically excluded from further National Environmental Policy Act (NEPA) analysis, in accordance with implementing procedures for NEPA for the Animal and Plant Health Inspection Service (APHIS) (7 CFR 372.5(c), 60 Fed. Reg. 6,000, 6,003, (1995)). WS is preparing this EA to: 1) facilitate planning, interagency coordination, and the streamlining of program management; 2) clearly communicate to the public the analysis of individual and cumulative impacts of program activities; and 3) evaluate and determine if there are any potentially significant or cumulative adverse impacts from the proposed program. All wildlife damage management conducted in Wisconsin would be undertaken in compliance with relevant laws, regulations, policies, orders and procedures, including the Endangered Species Act (ESA) of 1973, as amended (16 USC 1531-1543).

Newspaper notices and letters to interested parties were used to solicit public and agency input to identify major issues and concerns. Comments received by WS pertaining to the effects that social, legal, biological, economic, and physical elements may have on the proposed program or the effects this proposal may have on the quality of the human environment have been incorporated into this EA. Notice of Availability of this EA will be made, consistent with APHIS's NEPA procedures, to allow interested parties the opportunity to obtain and review the document and comment on the proposed management program prior to a Decision being made.

1.2 WOLF ACTIVITY IMPACTS TO THE ENVIRONMENT AND SOCIETY ATTITUDES

1.2.1 Wolf Ecology

Gray wolves obtain their food by running down prey and they can attain speeds of 35–44 miles/hour (Mech 1974) and a travel gait of 5 miles/hour can be maintained for long distances. The presence of wolves in an area is dictated by the availability of habitat for its prey species. Wolves in forested environments appear to depend generally on their sense of smell and hearing (Mech 1970). Their sense of smell is highly developed, enabling them to detect odors from distances as far as 1½ miles; smell functions both to detect prey (Mech 1970) and in territorial marking and social interaction (Asa et al. 1985). Harrington and Mech (1982) reported that wolves replied to human howls from a distance of 3 miles and possibly from as far as 6 miles. Vision in wolves is apparently acute but, compared with smell and hearing, may be the least highly developed; however, this is difficult to test.

The social behavior of gray wolves is affected by their reproductive cycle and need to hunt in packs. Pack dynamics, social status of individuals, movements, and certain aspects of seasonal habitat use are all affected by their reproductive behavior. Gray wolf packs normally consist of several sub adult and adult males and females that can produce young. However, reproductive failure in wild packs is estimated at about 38% of all adult females that bear young (Packard et al. 1983). This failure is believed to be the result of deferred reproduction (i.e., lack of copulation) rather than the suppression of hormonal cycles (Packard et al. 1983, 1985). Delayed behavioral maturation provides an adaptive advantage to the pack in that many members help raise just a few young or the young of the dominant pair. The pack can remain as a viable social unit, necessary for successful hunting, while reducing competition for mates and maintaining pack unity through their social hierarchy. This also provides an advantage to the alpha males and females by

increasing the probability that only their genes are passed on.

The social standing of wolves within a pack influences the breeding cycle among high-ranking members in the hierarchy. Alpha animals suppress lower-ranking animals in their behavior towards them and generally mate with other high-ranking animals. Some captive females have been observed as capable of conceiving at 10 months (Medjo and Mech 1976), but sexual maturity in the wild usually is attained at 22 months and often wolves do not breed until their third or subsequent years. Females coming into estrus for the first time may do so 2 weeks later than those that have previously bred (Rausch 1967). Estrus in wolves lasts from 5 to 7 days (Mech 1974) or longer and occurs any time from January to March, depending on latitude. Most breeding in Wisconsin is assumed to occur in late January and February (A. P. Wydeven, WDNR, pers. comm. 2003).

Ovulation and implantation are regulated by a number of factors. In one study (Rausch 1967), females breeding for the first time shed an average of 6.1 ova and implanted 5.4 embryos, whereas older females shed an average of 7.3 ova and implanted 6.5 embryos. Five adult females found in Wisconsin in the 1980s and early 1990s, had an average of 5.2 (range 3-8) fetuses. Gestation lasts about 63 days and average litter size is about six, with extremes recorded being from 1 to 11 (Mech 1974). A wolf pack generally produces one litter per year (Packard and Mech 1980); however, well-documented cases of births of more than one litter per pack per year have been recorded both in captivity (Paquet et al. 1982) and in the wild (Murie 1944, Van Ballenberghe 1983). In such cases, adults in the pack often divide their time between dens and will unite the family groups after the pups become mobile (Murie 1944). Occasionally, subordinate wolves that have left the pack are known to have produced pups (Peterson et al. 1984).

Young are usually born in earthen dens or in dens taken over from other animals and availability of suitable habitat for denning is only of secondary importance when compared to prey availability (Carbyn 1975, Ballard and Dau 1983). Young are born with their eyes closed and initially have a poor thermoregulatory system. Newborn pups weigh about 1 pound (Rutter and Pimlott 1968) and their movements are limited to a slow crawl. Eyes open at 11-15 days (Mech 1970), but pups see poorly until they are several weeks old. At about 3 weeks pups will emerge from the den and can be found romping near den entrances (Young and Goldman 1944). Social interactions begin to develop during this period. After several weeks pups are moved to activity sites, which are also referred to as "rendezvous" or "home sites"; generally less than 1.2 miles from den sites (Carbyn 1975, Peterson et al. 1984). Thereafter, pup activity is centered on a succession of home sites progressively farther from the den. By 4 to 6 months, pups have reached nearly adult size; they then range with packs in winter circuits.

Wolves are opportunistic predators and prey most extensively on ungulates and beaver (*Castor canadensis*); although in exceptional cases they have resorted to feeding on garbage (Grace 1976) or such unusual food items as insects (Kuyt 1972) and fish (Bromley 1973). Mandernack (1983) found deer at 55%, beaver at 17%, and snowshoe hare (*Lepus americanus*) at 12% volume (relative bulk density) of 334 wolf scats found in Wisconsin, but scat samples were biased toward the warmer months. Mettke (1998) found 78% deer by volume in 47 scats from a pack in northwest Wisconsin in late winter and early spring. Surprisingly both studies also found pig (*Sus scrofa*), probably from carcasses thrown in the forest, and Mettke (1998) also found 3% volume of calf remains in scats.

When food is abundant, wolves prey on the most vulnerable animals. Young, older, or otherwise less robust individuals are most vulnerable to wolf predation (Murie 1944, Pimlott et al. 1969,

Mech and Frenzel 1971, Mech and Karns 1977, Peterson 1977, Carbyn 1983). Snow conditions and forage limitations may render a large proportion of a prey population vulnerable to wolves.

When food is plentiful, wolves normally eat meat at about 2 oz prey/pound of wolf/day (Kolenosky 1972) (i.e., an 80 pound wolf would consume about 10 pounds of meat); however, consumption rates in the wild may be as high as 3 oz. prey/pound wolf (i.e., 15 pounds of meat for an 80 pound wolf) (Fuller and Keith 1980) and 4 oz prey/pound wolf (20 pounds of meat for an 80 pound wolf) (Carbyn 1983). However, wolves have an amazing ability to survive long periods with little or no food. Mech (1977) learned that as a result of food deprivation during winter, wolves conserved energy by traveling less and sleeping more than under normal conditions. Wolves have also demonstrated remarkable stamina when injured.

Wolves kill and consume other carnivores, including other wolves (Van Ballenberghe and Erickson 1973, Fuller and Keith 1980), dogs (L. Carbyn, pers. observation) and bears (*Ursus americanus*, *U. maritimus*) (Horejsi et al. 1984, Ramsay and Stirling 1984, Paquet and Carbyn 1986). At other times carnivores are killed and not consumed. For example, wolves have been observed to kill but not eat dogs, coyotes (*Canis latrans*) (Carbyn 1982), wolverines (*Gulo gulo*) (Boles 1977), and mink (*Mustela vison*). In addition, instances have been recorded where more prey are killed than can be consumed (i.e., surplus killing) (Björvall and Nilsson 1976, Mech 1977, Eide and Ballard 1982, DelGiudice 1998). Killing by wolves ranges from predation (killing to eat either an entire carcass or part of it) to aggressive and surplus killing. In cases where coyotes, dogs, or other wolves are killed but not consumed, aggressive killing is implicated.

1.2.2 Benefits of Wolf Activities

Wildlife generally is regarded as providing economic, recreational, and aesthetic benefits (Decker and Goff 1987), and the mere knowledge that wildlife exists is a positive benefit to many people. Direct benefits are derived from a user's personal relationship or direct contact with wildlife and may include both consumptive (e.g., using or intending to use the animal such as in hunting or fishing) and non-consumptive uses (e.g., observing or photographing animals) (Decker and Goff 1987).

Wolves may play an important role in predator/prey relationships. By culling old, young, sick, and injured individuals from a prey population, it is believed that wolves help maintain healthier, viable prey populations when other prey population mortality factors are in balance (Mech 1970).

Viewing wolves or getting them to howl in their natural habitat is a popular activity in certain areas and is considered to add value to many people's outdoor experience. Organized tours for the purpose of viewing wolves or hearing them howl are conducted at some U.S. and Canadian national parks such as Yellowstone (WY), Denali (AK), Wood Buffalo (Alberta, Canada), and Riding Mountain (Alberta, Canada). Small or large group howling attempts can also be made in any areas where wolves are known to be present. Such activities provide not only aesthetic viewing but there may also be associated economic (tourism) benefits.

1.2.3 Damage from Wolf Activities

The ability of wolves to kill cattle, sheep, poultry, game farm animals, and other livestock is well documented (Young and Goldman 1944, Fritts 1982, Carbyn 1983, Fritts et al. 1992, Paul unpublished data, 1975-2001). Domestic dogs and cats are also occasionally killed and eaten by wolves (Fritts and Paul 1989).

The economic impact of wolf depredation on livestock can be substantial for individual producers and in total. Further, when wolves come into contact with people (Linnel et al. 2002), or kill or injure their pets there is both an economic and an emotional loss. There is the cost to replace a pet that has been killed or to care for one that has been injured. Also, many people are attached emotionally to their pets and have very strong feelings concerning their loss.

Wolves can also negatively impact other wildlife species, especially wolf prey species. Where wolves are the dominant predator on an ungulate species (deer, moose, elk, and etc.) and prey numbers are below carrying capacity, a significant reduction in wolf numbers can produce increases in the number of ungulate prey (Gasaway et al. 1983, Gauthier and Theberge 1987). Deer, moose, elk, and other ungulates have great economic and aesthetic value and therefore wolf control can sometimes be economically justified. When wolf control programs are terminated, wolves may rapidly recover through immigration and reproduction (Ballard et al. 1987). Wolf control conducted to enhance or recover ungulate populations must be considered as an acceptable management option, although controversial (Mech 1985).

1.3 NEED FOR WOLF DAMAGE MANAGEMENT IN WISCONSIN

The need for action in Wisconsin is based on the necessity to protect agricultural resources, including livestock and game farm animals, property and pets from wolf depredations, and to protect human health and safety from potentially hazardous or threatening wolves as wolf populations increase in Wisconsin (Figure 1-1). Also, the need exists to provide an effective program to resolve wolf conflicts in order to promote wolf conservation and public acceptance of wolves in Wisconsin as a fundamental component of wolf conservation efforts (50 CFR 17.40(o)).

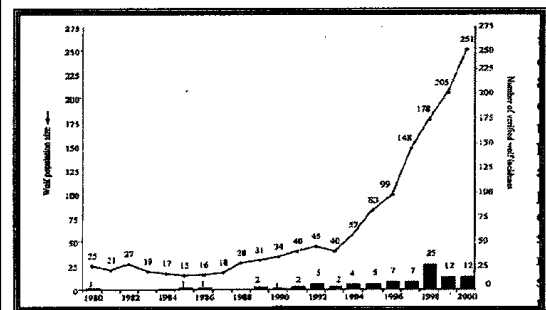
1.3.1 Wolf Distribution and History in Wisconsin.

1.3.1.1 Wolf Distribution and Classification

The original distribution of wolves covered most of the Northern Hemisphere north of latitude 20°N (Mech 1974). This places the wolf second only to the Pleistocene lions (*Panthera leo*) in having attained the widest distribution of all wild land-dwelling mammals (Nowak 1983). Wolves are not restricted to specific habitat types but once occurred in the Middle East and all across Europe, including the old Soviet Union (Pimlott 1975, Mech 1982).

Prior to European settlement, gray wolves occupied all of North America except possibly for the large desert areas of the United States. The decline in numbers in the United States progressed rapidly, starting from the east and moving westward. By about 1900 the species had disappeared from the eastern half of the United States except for the upper Great Lakes region, and by about 1930 most wolf populations in the west were almost completely gone. In Canada the trend was similar (Carbyn 1983) but not as complete. Then occurred what Nowak (1983) referred to as "one of the most remarkable wildlife comebacks in history." Wolves spread back into formerly occupied ranges from

Figure 1-1. Verified Wolf Depredations and Population Size of Wolves in Wisconsin (Treves et al. 2002).



Alaska to the Great Lakes.

The vast expanses of forested areas on North American resulted in a wide-spread unrestricted gene flow. In recent times, habitat has become less continuous and therefore populations are more disjunctive, which may contribute to long-distance movements. Movements of wolves from one region to another are considered to be the greatest of any modern terrestrial mammal (Van Camp and Gluckie 1979, Fritts 1983). The current distribution of wolves in North America is largely confined to the northern half of the continent.

On April 1, 2003, the USFWS changed the classification of the gray wolf under the ESA. The USFWS established three distinct population segments (DPS) for the wolf in the conterminous US. The wolves in Wisconsin are in the Eastern DPS and were down listed from endangered to threatened because of this action (50 CFR 17.40(o)). They also established a new special regulation under section 4(d) of the ESA which applies provision similar to those in Minnesota to most of the Eastern DPS of wolves. The USFWS found that these special rules were necessary and advisable to provide for the conservation of the wolves in the Western and Eastern DPS (50 CFR 17.40(o)).

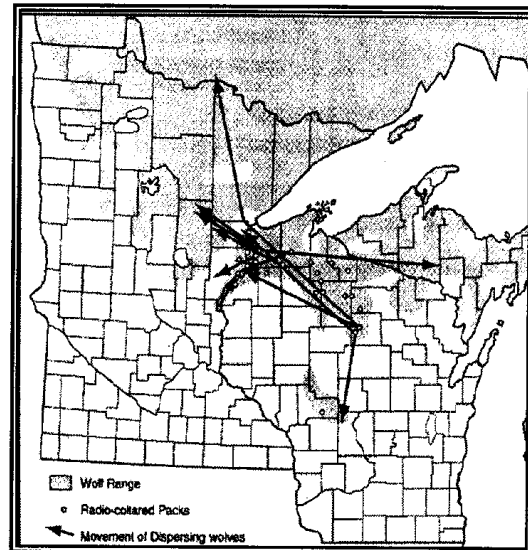
1.3.1.2 Wolf History in Wisconsin

Gray wolves occurred throughout Wisconsin prior to European settlement. However, they were extirpated from southern Wisconsin by the 1880's and central Wisconsin by 1914. A remaining wolf population occurred in a few northern Wisconsin counties, but had declined to fewer than 50 animals by 1950. The last Wisconsin wolf was probably killed in the late 1950's (Wydeven et al. 1995).

In 1974 the gray wolf in the contiguous 48 states was listed as endangered under provisions of the ESA. A Federal "*Recovery Plan for the Eastern Timber Wolf*", approved in 1978 and revised in 1992, stated that a primary objective is to reestablish viable populations in as much of its former range as possible (USFWS 1992). Under the protections of the ESA, wolf populations in Wisconsin and Minnesota freely disperse (Figure 1-2). Wolf population monitoring by WDNR began in 1979 and estimated a population of 25 wolves in five packs at the time (Figure 1-3).

In 1986, the WDNR created a Wolf Recovery Team to develop a Wisconsin Wolf Recovery Plan. A Recovery Plan was approved by the WDNR in 1989. This plan followed the intent of the Federal Recovery Plan and supported reclassification of the wolf in Wisconsin from "*endangered*" to "*threatened*" when a minimum population of 80 animals was maintained for three consecutive years. The Wisconsin recovery goals were achieved in 1997, and in 1999 wolves were officially reclassified to

Figure 1-2. Dispersal of Wisconsin Wolves



“threatened” by the state. The 2002 wolf population was estimated at 335 (328 outside Indian reservations) animals by the WDNR. Wolf numbers in Wisconsin have greatly surpassed recovery goals identified in the Federal and State recovery plans. The final rule of April 1, 2003 changed the classification of wolves in the Eastern DPS from endangered to threatened (50 CFR 17.40(o)).

1.3.2 WS and WDNR Efforts to Reduce Wolf Damage in Wisconsin.

WS’ efforts to alleviate wolf problems have been and will likely continue to be based on a combination of technical assistance and operational damage management in an IWDM program. The number of significant wolf conflicts in Wisconsin has increased the need to implement operational damage management projects (Figure 1-4). Under the WWMP (1999), live-trapping and relocation of problem wolves, and/or live-trapping and euthanizing problem wolves by government officials, including WS, would be allowed in accordance with the Eastern DPS 4(d) rule (50 CFR 17.40(o)).

Since 1988, WS has cooperated with the WDNR concerning several aspects of wildlife damage management. In 1990, a cooperative agreement was developed which included a provision for reducing damage cause by endangered species, including wolves. Under terms of the current cooperative agreement, WS “will provide personnel and equipment for depredation control and damage loss appraisal activities for damage by Endangered and Threatened species.” WS conducts field investigations of potential wolf depredations within 48 hours of receipt of a complaint. In accordance with the WWMP (1999), WS categorizes each complaint into one of four categories: 1) confirmed depredation, 2) probable depredation, 3) confirmed non-wolf depredation, and 4) unconfirmed depredation. Under the current program, WS may provide technical assistance to producers as appropriate, or upon request by WDNR, WS live-traps at or near verified (confirmed or probable) depredation sites, and delivers any wolves captured to WDNR alive. While wolves were classified as endangered under the ESA (until 2003), they were relocated by WDNR. In one incident, a wolf was euthanized by WDNR under special permit.

1.3.3 Wolf Complaints and Predation.

The number of wolf complaints reported to the Wisconsin WS program has shown an increasing trend (Treves et al. 2002) as the wolf population has increased in the State (Figure 1-3 and Figure 1-4). In 1990 one complaint was reported to the WDNR, but in 2002 WS investigated 86

Figure 1-3. Wolf Population and Wolf Packs in Wisconsin from 1980 to 2002.

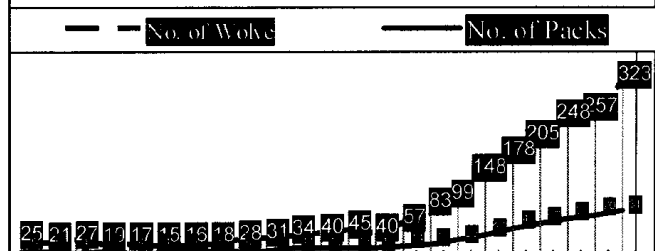
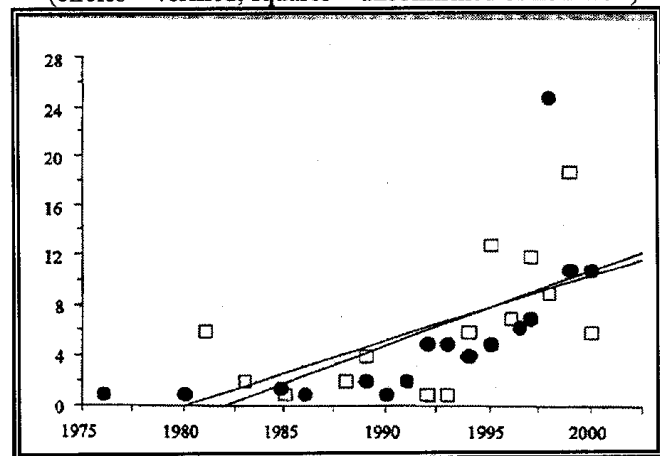


Figure 1-4. Wolf Depredation Complaints in Wisconsin (Treves et al. 2002).

(circles = verified; squares = unconfirmed or non-wolf)



complaints, of which 31 were verified as either confirmed or probable. Since 1990, WS has investigated 154 wolf depredation complaints. Of these, 44% were confirmed or probable depredations. WS also investigated 38 depredation complaints in 2000, with 15 (39%) confirmed or probable. As the wolf population expands in Wisconsin, the need for wolf damage management will also increase to reduce damages and increase human tolerance for wolves (A. P. Wydeven, WDNR, pers. comm. 2003).

The WDNR provides compensation payments for all verified wolf depredations. Wolf damage compensation payments made by WDNR from 1982 through 2000 totaled \$150,485.75, and included damage or depredations to sheep, calves, turkeys, dogs, penned deer, and chickens (Table 1-1) (Treves et al. 2002). Total payments for wolf damage totaled \$192,688 for FY1997-1998 to 2001-2002 (ave. \$38,538 annually) (Table 1-2) (A. P. Wydeven, WDNR, pers. comm. 2003). Damage values verified by WS totaled \$95,037, from 1998 – 2002 (Table 1-1). Human health and safety complaints involving wolves were also reported.

Table 1-1. Total Damages (\$) from Wolves by Resource Category Verified* by WS.

| Resources (\$) | 1998 | 1999 | 2000 | 2001 | 2002 | Totals |
|-------------------------|---------------|--------------|--------------|---------------|---------------|---------------|
| Cattle/calves | 2,025 | 1,760 | 1,780 | 0 | 5,500 | 11,065 |
| Cattle/adult | 0 | 1,500 | 2,200 | 4,250 | 3,200 | 11,150 |
| Commercial Game Animals | 1,300 | 0 | 4,500 | 0 | 7,000 | 12,800 |
| Equine | 0 | 0 | 0 | 0 | 2,000 | 2,000 |
| Chickens | 0 | 155 | 16 | 0 | 0 | 171 |
| Turkeys | 0 | 0 | 0 | 213 | 0 | 213 |
| Pets | 14,750 | 1,150 | 0 | 19,300 | 22,338 | 57,538 |
| Sheep | 0 | 0 | 100 | 0 | 0 | 100 |
| Totals | 18,075 | 4,565 | 8,596 | 23,763 | 40,038 | 95,037 |

* Wildlife-caused losses or damages confirmed by WS. These figures usually represent a fraction of the total losses (Connolly 1992).

1.3.4 Wolf Depredation on Other Resources and Threats to Human Health and Safety.

There have been few wolf attacks on people. However, there are reports where wolves have been viewed as threatening to human health and safety or have stalked and attacked people for unknown reasons and unrelated to diseased wolves (Linnel et al. 2002). When wolves come near residences and threaten or kill people's pets or exhibit bold behavior, people often become concerned for human safety. This is especially true if small children are present at those residences. This concern is often reinforced by the fact that when wolves come into yards, especially after dogs, the wolves may seem reluctant to leave, even when they are harassed by humans. This often leaves people with the impression that there is something wrong with the wolf, that it is diseased or debilitated, and therefore a threat.

Young and Goldman (1944) reviewed wolf attacks on humans from the early days of settlement. They found many stories from trappers and hunters who were "attacked" or had close encounters with wolves acting aggressively. They discuss several such incidents whereby the wolves seemed

Table 1-2. Compensation Paid for Wolf Damage by the WDNR between 1982 and 2000.

| Animal | Compensation Paid (\$) | |
|-----------|------------------------|---------|
| | Total | Average |
| Cattle | 33,633 | 410 |
| Chickens | 245 | 5 |
| Dogs | 46,472 | 1192 |
| Farm Deer | 68,250 | 3,412 |
| Sheep | 584 | 53 |
| Turkeys | 1301 | 8 |

average and non-diseased, but some incidences were apparently provoked by rabid animals. For the first half of the 20th century, Young and Goldman (1944) were not able to find any documented cases of wolves attacking and causing injury to humans. However, they concluded by stating, “the accounts to be found throughout the wolf literature seem to leave little doubt that wolves have at times made unprovoked attacks on humans.”

Linnell et al. (2002) were able to find and report several cases where non-diseased wolves attacked people, but no humans were killed during the attacks; the wolves, in most cases, were later killed and examined. The wolves involved in those attacks seemed to have acclimated to the presence of people and became more aggressive (bold) toward people. Fortunately, in many of these incidents, others accompanied the person attacked and they were able to drive the wolf away. In many cases the person attacked received minor injuries and made a full recovery in a few days to weeks; there are no verified instances of wolves having attacked and injured people in the lower 48 United States.

Wisconsin has not had any reported cases where wolves have stalked or attacked people. However, there has been at least one situation where a wolf was acting aggressively towards automobiles that slowed or stopped in a certain area along a major northern highway. Acting on a request from WDNR, WS attempted to trap the animal but was unsuccessful. The wolf eventually left the area. With a growing wolf population and many people living in occupied wolf range, a case can be made for wolves to be exposed to more and more people and possibly prompting an attack under unknown conditions. If this situation would occur, the WDNR and WS would respond and attempt to stop the attacks and resolve any foreseen future attacks.

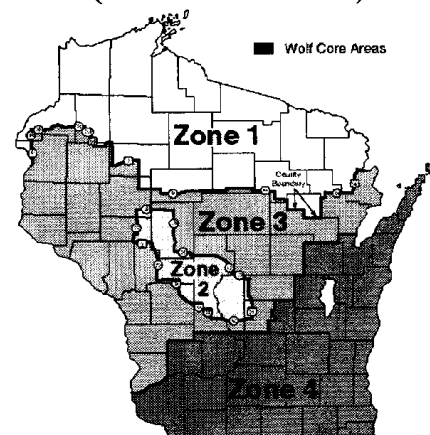
Wild wolves rarely contract rabies, but it is possible, and there is a serious concern for humans or their pets should they be bitten. Wolves could possibly spread other wildlife diseases to dogs (e.g., sarcoptic mange) should they have contact with a dog or their environment or vice versa. In addition, *Neospora caninum* is a protozoal parasite recognized as causing the disease neosporosis, a major cause of abortions in cattle. It was discovered that dogs serve as a definitive host in the transmission of the disease. The evidence is less conclusive that wild canids, such as foxes, coyotes, and wolves, also aid in the transmission of the disease. Further research is needed to evaluate the role wolves may have in the transmission of neosporosis.

Domestic dogs and cats are also occasionally killed and eaten by wolves (Fritts and Paul 1989). In Wisconsin, hunting dogs used to pursue bear, coyotes, and bobcats are frequently killed by wolves during hunting seasons. During 2002 alone, WS verified that wolves killed 10 dogs, wounded another 4 dogs and were a threat to another 10 dogs at residences scattered across the wolf range. There are probably other instances where wolves attack dogs, but the incident was not reported or the dog just “turned-up” missing. Wolves may carry off the carcass of a small dog or drag a dog’s carcass out of the yard and into the woods. Such attacks raise serious concerns by people about both pet and human safety.

1.4 SCOPE AND PURPOSE OF THIS EA

Four Wolf Management Zones have been established to help management wolves in Wisconsin (Figure 1-5). Wolf Management Zone 1 contains the best wolf habitat in Wisconsin

Figure 1-5. Wolf Management Zones (includes Core Areas)



and encompasses about 11,765,760 acres, Zone 2 contains suitable wolf habitat and encompasses about 2,893,440 acres, Zone 3 is a buffer zone and encompasses about 11,520,000 acres and Zone 4 has almost no opportunity for wolves to colonize and encompasses about 10,240,000 acres. Damage problems involving wolves can occur statewide resulting in requests for assistance to the WDNR or WS, but would more likely be from Management Zones 1 or 2. The establishment of zone managements is frequently recommended as part of wolf recovery plans, wolf conservation and management plans (Mech 1995) and the establishment of protective areas helps assure long-term survival of small, disjunctive wolf populations (Haight et al. 1998). The purpose of management zones is to vary management depending on potential wolf habitat and the possibilities of conflict between wolves and humans. Fritts (1993) listed three assumptions inherent in zone management for wolves: 1) wolves belong in some areas and not others because of potential conflicts with humans, 2) adequate habitat to support a viable population should exist in the zones where the species is afforded the most protection, and 3) the species should receive high priority in the areas of most suitable habitat. The WDNR utilizes four zones to manage and conserve wolves in the State (Figure 1-5) (WWMP 1999).

Wolves, at times, prey upon livestock and other domestic animals in areas where wolves and domestic animals coexist (see Section 1.3.3 and 1.3.4). As wolf densities increased in Wisconsin, increased depredations on domestic animals have occurred. Under the Proposed Action, wolf damage management could be conducted anywhere in Wisconsin where an agreement is in place and a need has been identified, and in accordance with the USFWS reclassification rule (2003) (50 CFR 17.40(o)), the WWMP (1999), and associated policies and guidelines, including MOUs between the State and American Indian Tribes. Requests for assistance, both technical and operational, are expected to increase in the future (A. P. Wydeven, WDNR, pers. comm. 2003).

A reclassification proposal by the USFWS issued on July 13, 2000 and approved April 1, 2003 (50 CFR 17.40(o)) recognizes the improving status of the gray wolf in the Eastern U.S., and reclassifies the Eastern DPS as threatened. In addition, Wisconsin is currently pursuing State delisting since the wolf population has met the goal of 250 for at least one year. Federal reclassification from endangered to threatened allows the WDNR and WS to trap and euthanize wolves to resolve wolf depredation problems which will increase tolerance for wolves in accordance with a special 4(d) rule (50 CFR 17.40(o)).

The scope and purpose of this EA are to evaluate the potential impacts of wolf damage management projects conducted by WS, in cooperation with the WDNR⁴, to protect agricultural and natural resources, pets, property, and human health and safety in Wisconsin, and conserve wolf populations. Damage problems can occur throughout the State, resulting in requests for WS assistance. Under the Proposed Action, wolf damage management could be conducted on private, Federal⁵, State⁵, tribal⁶, county, and municipal lands in Wisconsin. In the most recent three year period, Fiscal Year (FY) 2000 to FY 2002, WS only conducted wolf damage management in Zone 1 on three, four, and eight properties in each year under *Agreements for Control* (MIS 2000-2002). The acres that WS conducted wolf damage management were 3,100 acres in FY00, 3,180 acres in FY01 and 5,135 in FY 02. This represented about 0.03%, 0.03% and 0.04%, respectively, of the land area of Management Zone 1 and 0.009%, 0.009 and 0.015%, respectively, of the land area of Wisconsin. In the foreseeable future, WS and the WDNR anticipate that the proposed action would only occur at individual damage sites (properties) distributed primarily within Management Zones 1 and 2, and it is anticipated that less than 15% of the wolf

⁴ The authority to reduce wolf damage is managed by Wisconsin State agencies; however APHIS may provide limited assistance to the State in their management efforts. Wisconsin State agencies could take action independent of WS or other Federal agencies. Primary authority for wildlife management resides with the State of Wisconsin, thus calling into question the value of any Federal process in planning and decision making.

⁵ WS anticipates that limited wolf damage management will occur on public lands as public lands.

⁶ WS wolf damage management would only be conducted on tribal lands at the Tribes request and only after appropriate documents had been signed by WS and the respective Tribe.

population would be removed annually. This estimate is based upon past and present *Agreements for Control* (MIS 2000-2002). The WDNR and WS anticipate increases in future WS wolf damage management activities as wolf populations' increase and disperse into more agricultural and suburban/urban areas. Through WDNR wolf monitoring and surveillance, any increase in wolf populations and damage management activities would be accounted for and any adaptive management adjustments would be considered to insure wolf conservation.

1.5 PROPOSED ACTION

The proposed action is to implement an adaptive integrated wolf damage management program^{7, 8} to protect agricultural and natural resources, pets, property, and human health and safety on all lands in Wisconsin where a need exists and a request is received, in accordance with the WWMP (1999), USFWS 4(d) rule for the Eastern DPS (50 CFR 17.40(o)), Eastern Gray Wolf Recovery Plan (USFWS 1992) and all applicable policies, agreements and guidelines between WDNR⁹, WS, and USFWS. An adaptive IWDM approach would be implemented to protect various resources from wolf damage and considers using all legally available and acceptable methods after applying the WS Decision Model¹⁰ (Slate et al. 1992) to help determine the most appropriate action(s) to take, either singly or in combination to alleviate or stop wolf-caused damage and conserve wolf populations. An IWDM strategy would be recommended and used, encompassing the use of practical and effective methods of preventing or reducing damage while minimizing harmful effects of damage management measures on humans, wolves, other species, and the environment.

Wolf damage management work is currently being conducted by WS under a CE and Federal permit from the USFWS. Damage management would be conducted on private or public property in Wisconsin when the resource owners (property owners) request assistance to alleviate wolf damage, wolf damage is verified by WS, and an *Agreement for Control* or other comparable document has been completed.

Resource managers and owners would continue to receive technical assistance in the form of instructional sessions, demonstrations, equipment loans, and information on the availability and use of non-lethal and lethal methods (Appendix C). When applicable, non-lethal methods recommended by WS could include, but would not be limited to, changes in farm practices, harassment, exclusion, guarding animals, habitat modification, cultural practices, and behavior modification of problem wolves. Non-lethal methods used by WS may include leg-hold traps, land restraint snares with "stops", and behavior modifications. However, non-lethal methods may not always be applied as a first response to each damage problem encountered by WS. The most appropriate initial response to a wolf damage problem could be a combination of non-lethal and lethal methods, or there could be instances where application of lethal methods alone would be the most appropriate strategy. Lethal methods used by WS could include shooting, aerial gunning¹¹, potentially neck snares, euthanasia of wolves captured in leg-hold traps or snares, land restraint snares, or other devices, or shooting of unrestrained wolves. In determining the damage management strategy, preference would be given to non-lethal methods when they are deemed practical and effective, however, lethal methods would be used to reduce damage after practical and

⁷ WS' mission is to reduce wildlife damage.

⁸ This EA addresses wolf damage management on a statewide basis on lands under cooperative agreement or other comparable document because wildlife, especially wolves in this case, are co-managed by the WDNR and USFWS until delisting. After delisting, the WDNR will manage wolves under statewide statutes, laws and regulations of Wisconsin, and tribal governments may have share in that management responsibility. WS would consult with the WDNR and other State and Federal agencies on a regular basis to insure no adverse impacts to wildlife populations or other resources of the state occur.

⁹ The WDNR requested WS assistance to reduce wolf damage and assist in wolf recovery/conservation in Wisconsin.

¹⁰ The WS Decision Model is not a written process but rather a mental problem solving process to determine appropriate management actions to take.

¹¹ Aerial gunning may have limited application in Wisconsin and WS will determine in coordination with the WDNR when and where this method will be appropriate and effective.

appropriate non-lethal methods have been considered and determined to be ineffective or inappropriate in reducing damage to acceptable levels.

All wolf damage management activities would be consistent with other uses of the area, USFWS (1992), the WWMP (1999) and 50 CFR 17.40(o), and would comply with appropriate Federal, State and local laws and in cooperation with other governmental agencies and tribal governments, as appropriate. (See Chapter 3 for a more detailed description of the current program and the proposed action). The current and proposed WS wolf damage management program serve as an important buffer between wolf depredation problems and an expanding wolf population. It also helps to facilitate wolf recovery in the state by reducing the level of controversy that usually surrounds wolf management policies (Fritts 1993, 50 CFR 17.40(o), A. P. Wydeven, WDNR, pers. comm. 2003).

1.6 OBJECTIVES FOR THE WISCONSIN WS WOLF DAMAGE MANAGEMENT PROGRAM

- Acceptance of the program by cooperators and broadly accepted by the general public.
- Response to 100% of requests for wolf damage management assistance within 48 hours.
- No adverse impact on the statewide wolf population.
- Contribute to understanding, ecology, biology and health of the Wisconsin wolf population.

1.7 RELATIONSHIP OF THIS EA TO OTHER ENVIRONMENTAL DOCUMENTS

1.7.1 ADC Programmatic EIS. WS has issued a final EIS (USDA 1997) and Record of Decision on the National APHIS-WS program. This EA is tiered to the ADC Programmatic.

1.7.2 USDA-APHIS-WS/USFWS Biological Opinion. A biological opinion (BO) (USDI 1992) was prepared on the WS program to comply with Section 7 of the ESA and to determine if the proposed action would adversely affect any listed species. WS will comply with the terms and conditions and reasonable and prudent measures that the USFWS provided to reduce risk to threatened and endangered (T/E) species.

1.7.3 USDA-APHIS-Wisconsin WS/USFWS Biological Assessment. A consultation occurred between the USFWS and WS on May 9, 2001 and August 12, 2003. The USFWS determined that WS current and proposed wolf damage management program would have no effect or not likely to adversely affect listed species in Wisconsin (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003; L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001).

1.7.4 USDA-APHIS-Wisconsin WS/WDNR Biological Assessment. A consultation occurred between the WDNR and WS on March 23, 2002. The WDNR determined that WS current and proposed wolf damage management program would not adversely affect listed species in Wisconsin (S. Holtz, WDNR letter to D. Nelson, WS, March 23, 2002).

1.7.5 USFWS Eastern Timber Wolf Recovery Plan. This plan (USFWS 1992) outlines management strategies and population goals for recovery of wolf populations and provided recommendations for wolf depredation control. Pertinent information from this recovery plan is incorporated into this EA by reference.

1.7.6 Wisconsin Wolf Management Plan. A State recovery plan, initiated in 1989 and signed in 1999, set a goal for reclassifying the wolf from State endangered to threaten once the population remained at 80 or more wolves for 3 consecutive years. During 1999, the wolf population had increased to 197 and had been at 80 or more since 1995. The WWMP (1999), developed by the Wisconsin Wolf Advisory Committee of Stakeholders and ratified by the Committee and Natural Resources Board, outlines management of wolves in Wisconsin for the next 10-15 years. These guidelines provide a conservation strategy for maintaining a healthy, viable gray wolf population in Wisconsin and contribute toward national recovery, while addressing problems that may occur with wolf depredation on livestock or pets. WS is cooperatively working with the WDNR and will comply with the policies and guidelines set forth in the WWMP (1999) whereby pertinent portions are incorporated by reference.

1.7.7 Wisconsin State Historical Preservation Office (WSHPO). A consultation occurred between WS and WSHPO on February 4, 2002. It was determined that the *"Project as described will have no effect on significant cultural resources"* and the proposed action does not constitute a "Federal undertaking" as defined under Section 106 of the NHPA (Dexter 2002). Wisconsin WS would, as requested by WSHPO, halt work and contact the WSHPO if any cultural resources or human remains are discovered.

1.8 DECISION TO BE MADE

Based on the scope of this EA, the decisions to be made are:

- Should WS implement an adaptive IWDMM strategy, including non-lethal and lethal damage management methods to protect affected resources, to meet the objectives for wolf conservation, the WDNR, USFWS and WWMP (1999)?
- Would the proposed action affect the viability of the State wolf population, T/E, and non-target species?
- Would the proposed action have significant impacts on the quality of the human environment requiring preparation of an EIS?

1.9 RELATIONSHIP OF AGENCIES and TRIBES DURING PREPARATION OF THE EA

Based on agency relationships, MOUs and legislative authorities, Wisconsin WS is the lead agency for this EA, and therefore responsible for the scope, contents and decisions made. The WDNR, WDATCP, USFWS, U.S. Forest Service (USFS), Wisconsin County Forests Association (WCFA), Great Lakes Indian Fish and Wildlife Commission (GLIFWC), Voigt Task Force, and the Lac du Flambeau Band of Lake Superior Chippewa, Wisconsin Ho Chunk, and Lac Courte Oreilles Tribes had input during the EA preparation to ensure a multi-agency approach in compliance with NEPA and agency mandates, policies, and regulations.

1.10 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT ANALYSIS

1.10.1 Actions Analyzed. This EA evaluates planned wolf damage management to protect: 1) agricultural and natural resources, 2) property, and 3) human and pet health and safety in Wisconsin. Protection of other resources or other program activities will be addressed in other NEPA analyses, as appropriate.

1.10.2 Wildlife Species Potentially Protected by Wisconsin WS. Wisconsin WS assistance

may be requested to achieve management objectives for wildlife, including State or Federal T/E species or species of special concern (i.e., reintroduced elk (*Cervus canadensis*). If other needs are identified, a determination would be made on a case-by-case basis to determine if additional NEPA analysis is needed.

1.10.3 American Indian Lands and Tribes. Currently, Wisconsin WS does not have any MOUs with any American Indian Tribes. Any WS activities conducted on reservation lands would only be conducted at the request of the Tribe and after appropriate authorizing documents were signed. Therefore, WS would only conduct wolf damage management activities on reservation lands after agreements with the Tribes to conduct such activities are in place. If WS enters into an agreement with a Tribe for wolf damage management, this EA would be reviewed and supplemented if appropriate to insure compliance with NEPA. MOUs, agreements and NEPA compliance would be conducted as appropriate before conducting wolf damage management on reservation lands.

1.10.4 Period for which this EA is Valid. This EA would remain valid until Wisconsin WS and other appropriate agencies determine that new needs for action, changed conditions or new alternatives having different environmental effects must be analyzed. At that time, this analysis and document would be amended pursuant to NEPA. Monitoring and review of this EA will be conducted each year to ensure that the EA is sufficient.

1.10.5 Site Specificity. The purpose for preparing this EA is to determine if the proposed action could have a significant impact on the quality of the human environment, analyze other alternatives, coordinate efforts, inform the public of WS actions, and to comply with NEPA. This EA analyzes the potential impacts of wolf damage management, as coordinated with the WDNR, USFWS and other State and Federal agencies, on all lands in Wisconsin under MOU, Cooperative Agreement, or other comparable document. The EA also addresses the impacts of wolf damage management on areas where additional agreements may be signed in the future. Because the proposed action is to conduct a coordinated wolf damage management program in accordance with plans, goals, and objectives developed by the WDNR (WWMP 1999) and USFWS (USFWS 1992, 50 CFR 17.40(o)) to reduce damage, and because the program's goals and directives are to provide services when requested, within the constraints of available funding and workforce, it is conceivable that additional damage management efforts could occur. Thus, this EA anticipates these additional efforts and the analyses are intended to apply to actions that may occur *in any locale* and *at any time* within Wisconsin as part of a coordinated program.

The EA emphasizes major issues as they relate to specific areas whenever possible, however, many issues apply wherever wolf damage, or potential wolf damage occur and the resulting management actions taken. WS personnel use the WS Decision Model (Slate et al. 1992) as the "*on the ground*" site-specific procedure for each damage management action conducted by WS. The Decision Model is a thought process that guides WS through the analysis and development of the most appropriate individual strategy to reduce damages and detrimental environmental effects from damage management actions (see Chapter 3, Section 3.3.5 for a description of the Decision Model). The Decision Model and WS Directive 2.105 describe the site-specific thought process that is used by WS (USDA 1997, Chapter 2 and Appendix N for a more complete description of the Decision Model and examples of its application). Decisions made using the model would be in accordance with plans, goals, and objectives of the State and any mitigations and standard operating procedures (SOPs) described herein and adopted or established as part of the decision.

WS analyzed the current program and proposed action, and the other alternatives in this EA against the issues that were raised. These issues were analyzed at levels that are "*site*

specifically" appropriate for this action in Wisconsin. Determining impacts requires that WS look at the *context* of the issue and *intensity* of the action and impacts. The range of wolf populations is seldom a few acres or farm but rather over a much larger area that includes different land ownerships and political boundaries. Damage management actions are generally conducted on a much smaller portion of the habitat occupied by wolves (currently, within 1 mile of the damage site). As professional wildlife biologists, WS and the WDNR analyze impacts to the wolf population, and that the damage situation with wolves may change at any time in any location; wildlife populations are dynamic and mobile.

In summary, WS has prepared an EA that provides as much information as possible to address and predict the locations of potential wolf damage management actions and coordinates efforts with the WDNR, USFWS and/or WDATCP, as appropriate, to insure that wolf populations remain healthy and viable in the State. Thus, the EA addresses the substantive environmental issues pertaining to wolf damage management activities in Wisconsin. To reduce damages, along with corrective and preventive operational damage management, WS provides technical assistance and demonstrations to help prevent the need for operational damage management. WS can and does provide an analysis of impacts of their actions and impacts to reduce wolf damage within the scope of the EA. The site-specificity problem occurs when trying to determine the exact location where a wolf(ves) would cause damage before the damage situation occurs. By using the Decision Model, WS believes it meets the intent of NEPA with regard to site-specific analysis and that this is the only practical way for WS to comply with NEPA and still be able to accomplish its mission. WS determined that a more detailed and more site-specific level of analysis would not substantially improve the public's understanding of the proposal, the analysis, the decision-making process, and pursuing a more site-specific and more detailed analysis might even be considered inconsistent with NEPA's emphasis on reducing unnecessary paperwork (Eccleston 1995). In addition, in terms of considering cumulative impacts, one EA analyzing impacts in Wisconsin may provide a better analysis than multiple EA's covering smaller zones within Wisconsin.

1.10.6 Summary of Public Involvement. WDNR, WDATCP, USFWS, USFS, WCFA, GLIFWC, Voigt Task force and American Indian Tribes were invited to participate in the development of this EA and were asked to provide issues and concerns for consideration by WS. An invitation for public comment letter containing issues, objectives, preliminary alternatives, and a summary of the need for action, was sent to 1395 individuals, agencies, or organizations identified as interested in Wisconsin WS projects¹². Notice of the proposed action and invitation for public involvement were placed in eight newspapers with circulation throughout Wisconsin. WS received 245 public comment letters concerning the preparation of the EA. All responses were reviewed for pertinent issues and are maintained in the administrative file located at the Wisconsin WS District Office, P. O. Box 1064, Rhinelander, WI 54501-1064.

1.11 PREVIEW OF THE REMAINING CHAPTERS IN THIS EA

The remainder of this EA is composed of four (4) chapters and five (5) appendices. Chapter 2 discusses and analyzes the issues and affected environment. Chapter 3 contains a description of each alternative, alternatives not considered in detail, mitigation and standard operating procedures (SOP). Chapter 4 analyzes environmental consequences and the environmental impacts associated with each alternative considered in detail. Chapter 5 contains the list of preparers, reviewers and consultants of this EA.

¹² It is entirely possible that an urgent need, such as threats to human or pet health and safety could require that action be taken prior to reaching a decision. None of the planners and decision makers involved in this effort is precluded from considering comments filed in this process at any time (even after actions to deal with the threat have begun) and making appropriate adjustments to ongoing program operations.

Appendix A is the literature cited used during the preparation of the EA, Appendix B is the authorities for conducting wildlife damage management in Wisconsin, Appendix C is a detailed description of the methods used for wolf damage management, Appendix D is the Section 7 Consultations with the USFWS and WDNR, and Appendix E are the WDNR and USFWS WWMP (1999) depredation guideline for the reduction of wolf damage.

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CHAPTER 2: ISSUES AND AFFECTED ENVIRONMENT

2.1 INTRODUCTION

Prior to preparation of this document, WS solicited input from citizens, organizations, and governmental agencies so that: 1) issues and concerns could be identified and considered in the EA and 2) adverse environmental impacts could be avoided, minimized, or mitigated. This chapter discusses important environmental components that could be affected by the different wolf damage management alternatives analyzed in this EA. Issues identified by the public, including those supporting or opposing the WS mission, are also outlined and discussed.

2.2 AFFECTED ENVIRONMENT

As the historical distribution shows, wolves were not restricted to specific habitats. Wolves ranged from oak (*Quercus* spp.) savannah habitats of Mexico, through prairie in the Great Plains, through the Rocky Mountains, and the boreal forest and tundra regions within the U.S. and Canada. The presence of wolves in an area is dictated by the availability of habitat for its prey species. Availability of suitable habitat for denning is only of secondary importance. However, in forested areas, dens are usually located within 1,600 feet of water-bodies, on elevated knolls, and often in trembling aspen (*Populus tremuloides*) stands.

The area of the proposed action includes all private and public lands in Wisconsin where wolf damage is occurring or could occur. The proposed action could be conducted on urban sites or rural sites when a request is received and a need is present. Goals of the proposed action include the protection of agricultural and natural resources, property, and human and pet health and safety where wolves cause or could cause losses. Cultural, economic, social, legal, and other components of the affected environment are given further consideration in section 2.3 of this chapter, and in Chapters 3 and 4.

2.3 ISSUES CONSIDERED IN DETAIL IN CHAPTER 4

Several issues were identified by WS, WDNR, WDATCP, USFWS, USFS, WCFA, GLIFWC, Voigt Task Force, and American Indian Tribes during preparation of this EA. Some were used to prepare the detailed impact analyses of the alternatives in Chapter 4. The issues were also used to identify mitigation strategies and to develop SOP's for reducing or eliminating the likelihood of adverse environmental affects from implementation of the proposed action. Some issues, however, did not receive detailed analyses because WS wolf damage management would not have any adverse affect on the legal, social, or economic environment from project implementation. The following issues were determined to be relevant by WS, WDNR WDATCP, USFWS, USFS, WCFA, GLIFWC, Voigt Task Force and American Indian Tribes based on public and other agency comments, and analyzed in detail in Chapter 4:

- Viability of gray wolf populations in Wisconsin.
- Public health and safety from wolf management.
- Maintain effective and selective resource protection methods and tool.
- Potential for some WS methods to take non-target animals.

2.3.1 Viability of Gray Wolf Populations in Wisconsin.

The Federally protected gray wolf, which currently is "threatened" in Wisconsin (50 CFR 17.40(o)), is the primary species of interest as analyzed in the proposed action. Some persons

may be concerned that WS wolf damage management activities would result in the loss of local populations of wolves or have a cumulative adverse affect on the viability of Wisconsin's wolf population. As analyzed, WS removes only a small percentage of the wolf population in relation to the Wisconsin wolf population, and wolf reproduction and dispersal from Minnesota into Wisconsin (Figure 1-2), and natural dispersal and reproduction in Wisconsin would also aided in the recolonization and recovery of wolves, and that trend is expected to continue.

Wolf Population Impact Analysis.

Gray wolves are highly social, often living in packs of two to eight or more individuals. A pack consists of an adult breeding pair, young of the year, and offspring one or more years old from previous litters that remain with the pack. Each wolf pack has a home range or territory that it defends against intruding wolves and therefore a limited number of territories are available. In forested areas, such as in Wisconsin, territories may encompass 40 to 120 mi² (Mech 1970). Wolves expand their range in Wisconsin through natural dispersal from established packs and immigration from Minnesota and natural reproduction and dispersal in Wisconsin (Figure 1-2). Dispersing wolves meet, pair up, and establish new territories in areas not already occupied by wolves if habitat is available or where vacant territories exist.

As a Federally protected species with a "threatened" status, Wisconsin's wolves are under State management through the WWMP (1999) and 50CFR17.40(o). The USFWS, guided by the Eastern Timber Wolf Recovery Plan (USFWS 1992), was responsible for wolf recovery and management in Wisconsin. The plans support the lethal removal of depredating wolves and sets wolf population density limits for Wisconsin Wolf Management Zones (Figure 1-5) (WWMP 1999).

Federal downlisting regulations for the Eastern DPS of gray wolves (50 CFR 17.40 (o)) and the revised Eastern Timber Wolf Recovery Plan (USFWS 1992) support the lethal removal of wolves that depredate on domestic animals. The WWMP (1999) established a recovery goal for the Wisconsin wolf population (Table 2-1) and set Wolf Management Zones (Figure 1-5). Much of the range expansion by wolves in recent years has occurred in Zones 1 and 2 where population densities are considerably higher than those recommended (WWMP 1999).

Table 2-1. Wisconsin Wolf Listing/Delisting Criteria.

| Wolf Population | State Listing | Federal Listing |
|--|--------------------------|-----------------|
| Less than 80 | Endangered | Endangered |
| 80 or more for 3 years | Threatened | Threatened |
| 100 plus for 5 years in Wisconsin and Michigan | Threatened | Delisted |
| 250 wolves for 1 year | Delisted | Delisted |
| Decline to less than 250 for 3 years | Reclassify as threatened | Delisted |
| Decline to less than 80 for 1 year | Reclassify an endangered | Not Specified |

The authority for management of resident wildlife species is the responsibility of the WDNR and wolves are classified as a species of special concern (protected). WDNR compiles and provides information to WS on wolf population numbers and trends (A. P. Wydeven, WDNR pers. comm. 2003) and uses this information to develop a potential management plan for the State's wolf population once delisting occurs.

Wisconsin's wolf population is considered part of the Eastern Distinct Population Segment which includes MN, WI, MI, and the Dakotas. In 2002, Wisconsin's gray wolf population was estimated at 323 wolves with an annual growth rate of about 20% in spite of illegal killing (A. P.

Wydeven, WDNR, pers. comm, 2003). At the present time, Wisconsin's wolf population has met all the criteria outlined in the Eastern Timber Wolf Recovery Plan (USFWS 1992) for Federal delisting (Table 1-2). Those criteria included a wolf population recovery goal of 1,250-1,400 wolves in Minnesota by the year 2000 and a combined population of at least 100 wolves in Wisconsin and Michigan for five consecutive years.

2.3.2 Effects on Public Health and Safety from Wolf Damage Management.

A common concern is whether the proposed action or any of the alternatives pose an increased threat to public and pet health and safety. In particular, there is concern that the methods of wolf removal (i.e., trapping, snaring, and shooting) may be hazardous to people and pets, or that continued increases in wolf populations might threaten public and pet health or safety.

Firearm use is very sensitive and a public concern because of safety issues relating to the public and firearms misuse. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within 3 months of their appointment and a refresher course every 2 years afterwards (WS Directive 2.615). WS employees who use firearms as a condition of employment, are required to sign a form certifying that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

2.3.3 Maintain Effective and Selective Resource Protection Methods and Tools

Chapter 3 and 4 include discussion about the relative effectiveness and selectivity of the various methods used by WS and that discussion will not be repeated here. Under the current program and proposed program, all methods are used as effectively and selectively as practically possible, in conformance with the WWMP (1999), WDNR regulations, WS Decision Model (Slate et al. 1992) and WS Program Directives. The selectivity of each method is based, in part, on the application of the method and the skill of the WS employee, and the direction provided by WS Directives and policies.

The selectivity and effectiveness of each alternative is based on the methods employed under that alternative. WS personnel are trained in the use of each method. Effectiveness of the various methods may vary widely depending on local circumstances at the time of application. Some methods may be more or less effective or applicable depending on weather conditions, time of year, biological considerations, economic considerations, legal and administrative restrictions, or other factors. Because these various factors may at times preclude use of certain methods, it is important to maintain the widest possible selection of damage management tools to most effectively resolve wildlife damage problems.

2.3.4 Potential for Some WS Methods to Take Non-target Animals.

A common concern among members of the public and wildlife professionals, including WS personnel, is that the proposed action or any of the alternatives would result in removing individuals or adversely impact populations of native wildlife species, particularly T/E species. Special efforts are made to avoid jeopardizing T/E species through biological evaluations of the potential effects and the establishment of special restrictions or mitigation measures. WS has consulted with the USFWS under Section 7 of the ESA concerning potential impacts of damage management methods on T/E species and has obtained a BO (USDI 1992). The USFWS has concurred with WS that wolf damage management activities would have no effect or not likely

adversely affect Federally listed animal and bird T/E species in Wisconsin (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003; L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001). The WDNR has also concurred that WS wolf damage management activities would have no effect or not likely to adversely affect State listed animal and bird T/E species (S. Holtz, WDNR letter to D. Nelson, WS March 23, 2002). WS' SOPs include measures intended to mitigate or reduce the effects on non-target species populations and WS' mitigation and SOPs are designed to reduce the adverse effects on non-target species and to avoid jeopardizing T/E species' populations.

2.4 ADDITIONAL ISSUES CONSIDERED IN THIS EA

Issues, here in, are defined as unresolved concerns or conflicts. These unresolved concerns/conflicts often reflect opposing views and were identified through, and as a result of, discussions with potentially affected and interested parties. These issues have been consolidated into the following:

2.4.1. Humaneness of WS Activities and Methods.

The issue of humaneness, as it relates to the killing or capturing of wildlife is an important but complex concept. Kellert and Berry (1980) in a survey of American attitudes toward animals stated that 58% of their respondents, "*... care more about the suffering of individual animals ... than they do about species population levels.*" Schmidt (1989) indicated that vertebrate pest control for societal benefits could be compatible with animal welfare concerns, if "*... the reduction of pain, suffering, and unnecessary death is incorporated in the decision making process.*"

Suffering has been described as a "*... highly unpleasant emotional response usually associated with pain and distress.*" However, suffering "*... can occur without pain ...*," and "*... pain can occur without suffering ...*" (American Veterinary Medical Association (AVMA) 2001). Because suffering carries with it the implication of a time frame, a case could be made for "*... little or no suffering where death comes immediately ...*" (California Department of Fish and Game (CDFG) 1999), as in the case of shooting or drug-induced euthanasia.

Defining pain as a component of humaneness may, therefore, be a greater challenge than that of suffering. Pain obviously occurs in animals. Altered physiology and behavior can be indicators of pain, and identifying the causes that elicit pain responses in humans would "*... probably be causes for pain in other animals ...*" (AVMA 1987). However, pain experienced by individual animals probably ranges from none to significant (CDFG 1999). WS acknowledges that some damage management methods, such as leg-hold traps and body snares, may cause varying degrees of pain in different animal species for varying lengths of time. However, at what point pain diminishes or stops under these types of restraint has not been measured by the scientific community.

Pain and suffering as it relates to damage management tools used by WS to capture animals, is often interpreted differently by professional wildlife biologists and lay people. Others that receive damage or threats of damage may perceive humaneness differently, particularly if their pets or livestock are injured or killed and the humaneness of having their pets or livestock killed by wolves. Wildlife managers and the public would both be better served to recognize the complexity of defining suffering, since "*... neither medical nor veterinary curricula explicitly address suffering or its relief*" (CDFG 1991, 1999). Therefore, humaneness, in part, appears to be a person's perception of harm or pain inflicted on an animal, which, in turn, is governed by the person's past experiences. Different people may perceive the humaneness of an action in

different ways. The challenge in coping with this issue is how to achieve the least amount of suffering with the constraints imposed by current technology, funding, workforce and social concerns.

Research suggests that with some methods, such as restraint in leg-hold traps, changes in the blood chemistry of trapped animals indicate “*stress*” (USDA 1997:3-81). However, such research has not yet progressed to the development of objective, quantitative measurements of pain or stress for use in evaluating humaneness.

Therefore, the decision making process involves tradeoffs between the aforementioned aspects of pain from damage management activities and the needs of humans to reduce wildlife damage. An objective analysis of this issue must consider not only the welfare of wild animals but also the welfare of humans and prey animals if damage and losses are not stopped.

Wisconsin WS personnel are trained professionals who strive to use the most humane methods available to them, recognizing the constraints of current technology, workforce, funding and social concerns. In determining the damage management strategy, preference would be given to practical and effective non-lethal methods. However, non-lethal methods may not always be applied as a first response to each damage problem. The most appropriate response could be a combination of non-lethal and lethal methods, or there could be instances where application of lethal methods alone would be the most appropriate strategy.

WS has improved the selectivity and humaneness of many management devices through research and is striving to bring new, more humane tools and methods into use. Until new methods and tools are developed, a certain amount of animal suffering could occur (e.g., when non-lethal damage management methods are neither practical, available, nor effective). Whenever possible and practical, WS also employs euthanasia methods recommended by the AVMA (2001) or the recommendations of a veterinarian, even though the AVMA euthanasia methods were developed principally for companion animals and slaughter of food animals, and not for free-ranging wildlife.

2.4.2 Aesthetics of Wildlife.

The human attraction to animals has been well documented throughout history, an idea supported by prehistoric cave paintings and the domestication of wild animals. Today’s American public is no exception, as evidenced by the large percentage of households that have pets or observe wildlife. Some people also may consider individual wild mammals and birds as “pets” and exhibit affection toward these animals. They may also want to have more wild animals in their immediate environment. Some people also claim that they have a spiritual bond with wild animals. Conversely, some people have no emotional attachment to wildlife; some may even fear the presence of wild animals in their vicinity and demand their immediate removal.

Consequently, public opinion about the best ways to manage conflicts between humans and wildlife is highly variable, making the implementation and conduct of wildlife damage management programs extremely complex. Ideas about how these programs are implemented and conducted are as unique as the almost infinite combinations of philosophies, psyches, aesthetic values, personal attitudes, and opinions found in humans. These differences of opinion result in concerns that the proposed action or the alternatives would result in the loss of aesthetic or cultural/spiritual benefits to the general public and resource owners.

Wildlife generally is regarded as providing economic, recreational, and aesthetic benefits (Decker and Goff 1987), and the mere knowledge that wildlife exists is a positive benefit to many people.

Aesthetics is the philosophy dealing with the nature of beauty, or the appreciation of beauty. Therefore, aesthetics is truly subjective, dependent on what an observer regards as beautiful. Wildlife populations provide a range of direct and indirect social and economic benefits (Decker and Goff 1987). Direct benefits are derived from a user's personal relationship or direct contact with wildlife and may include either consumptive (e.g., using or intending to use the animal such as in hunting or fishing) or non-consumptive use (e.g., observing or photographing animals) (Decker and Goff 1987). Indirect benefits, or indirect exercised values, arise without a human being in direct contact with an animal and are derived from experiences such as looking at pictures or videos of wildlife, reading about wildlife, or benefiting from activities or contributions of animals such as their use in research (Decker and Goff 1987). Two forms of indirect benefits exist according to Decker and Goff (1987): bequest and pure existence. Bequest benefits arise from the belief that wildlife should exist for future generations to enjoy; pure existence benefits accrue from the knowledge that the animals exist in the human environment (Decker and Goff 1987) or that they contribute to the stability of natural ecosystems (Bishop 1987).

People directly affected by problems caused by wolves often insist on their removal from where the conflict occurs. Others have the idealistic view that all wildlife involved in conflicts should be captured and relocated to another area to alleviate the problem. Individuals not directly affected by a conflict may be supportive of affected humans, neutral, or totally opposed to any removal of wildlife from specific locations or sites. Those who oppose removal of wildlife may do so because of emotional ties to the animals, which are similar to the bonds that may exist between a human and a pet. Some may totally oppose wolf damage management, especially if lethal methods are used, and want WS to teach tolerance of wolves causing conflicts.

IWDM provides relief from damage or threats of damage to people who would have no recourse if other damage management methods are ineffective or impractical. Wisconsin WS only conducts wolf damage management at the request of citizens, organizations, and others who are experiencing problems (e.g., where a need exists) and as coordinated with the WDNR. When requests for wolf damage management assistance are received, WS and the WDNR consult, issues/concerns are addressed, an appropriate plan of action is developed, and reasons for selecting the action are explained. Management actions are carried out in a dedicated, humane and professional manner.

The public's ability to view wolves in a particular area would be more limited if wolves are removed. However, dispersal from other areas could possibly replace wolves removed if adequate prey and habitat are available, and the opportunity to view or hear wolves is available where adequate habitat exists.

2.4.3 Cultural, Economic, and Social Issues.

NEPA requires that aspects of the environment be considered in terms of environmental impacts, not only those related to biological resources. While the proposed action will have little impact on these other resources, they are included as part of the WS analysis of the affected environment.

2.3.4.1 Archaeological/Historical Site Protection.

Wisconsin law protects prehistoric or historic artifacts and sites on lands owned by the State or any of its political subdivisions (Wisconsin Statutes Annotated (WSA §§44.40). Wolf damage management has little potential to adversely affect sensitive cultural resources. Work areas are relatively small; therefore, ground disturbance would be minimal. A consultation occurred between WS and WSHPO on February 4, 2002 (Dexter 2002). It was determined

that the *“Project as described will have no effect on significant cultural resources”* and the proposed action does not constitute a “Federal undertaking” as defined under Section 106 of the NHPA. Wisconsin WS would, as requested by WSHPO, halt work and contact the WSHPO if any cultural resources or human remains are discovered.

2.3.4.2 American Indian Concerns.

The National Historic Preservation Act of 1966, as amended, requires Federal agencies to evaluate the effects of any Federal undertaking on cultural resources and to consult with appropriate American Indian Tribes to determine whether they have concerns for cultural properties in areas of these Federal undertakings. The Native American Graves and Repatriation Act of 1990 provides for protection of American Indian burial sites, human remains, funerary objects and sacred objects, and establishes procedures for notifying Tribes of any new discoveries.

In consideration of American Indian cultural and archeological interests, the Wisconsin WS program solicited input from the following Tribes within Wisconsin: Bad River Band of Lake Superior Chippewa, Forest County Potawatomi, Lac Courte Oreilles Band of Lake Superior Chippewa, Lac du Flambeau Band of Lake Superior Chippewa, Menominee Tribe, Oneida Tribe, Red Cliff Tribe, St. Croix Band of Lake Superior Chippewa Indians, Sokaogon Band of Chippewa Indians, Stockbridge-Munsee Tribe, and Wisconsin Ho Chunk. Three of the contacted Tribes responded to WS concerning the proposed action and are participants on the multi-agency team for developing the EA.

2.4.4 Impacts on Wisconsin's Biodiversity.

No Wisconsin WS project is conducted to eradicate any wildlife population, including wolves. In contrast, some projects are conducted to provide a species protection (e.g., trout habitat degradation from beaver, wolf conservation). WS complies with international treaties, Federal, State, and local laws, and regulations enacted to ensure species protection and viability.

Although Wisconsin does not have a formal biodiversity policy, the WDNR issued a strategy entitled *“Biodiversity as a Management Issue”* in July 1995 (Wisconsin Administrative Code Natural Resources §§1.01). The strategy contains broad recommendations and possible actions specific to each of the biological community types. The State also passed a forest diversity bill that adds native biological diversity as a purpose of State forests, and requires the WDNR to “assure that the management of the State forests is consistent with . . . the long-term maintenance of sustainable forest communities and ecosystems” (1995 Wisconsin Act 257). In addition, it is public policy by statute to protect forest resources and wildlife (Wisconsin Statutes Annotated (WSA) §§26.30).

Wisconsin also uses the Natural Heritage database, GAP and other inventory systems to monitor the State's habitat types and biodiversity (Defenders of Wildlife and Center for Wildlife Law 1996). Other projects include the Inland Waterways Environmentally Sensitive Areas Mapping Project and the Long-term Resource Monitoring Program (Defenders of Wildlife and Center for Wildlife Law 1996). In addition, a comprehensive survey of systematic terrestrial and aquatic communities and rare plants is being developed (Defenders of Wildlife and Center for Wildlife Law 1996). Further, State agencies are required to manage some lands for biological sustainability. By statute, agencies who own certain property must develop long-range management plans for the preservation and improvement of the land (WSA §§44.41).

Wisconsin also has an endangered species law that protects animals and plants (WSA §§29.65, 29.415; Wisconsin Administrative Code Natural Resources §§ 27.01 et seq). Listings are based on scientific evidence, commercial data and consultations.

The impacts of the current WS program on biodiversity are very minor and not significant, either statewide or nationwide (USDA 1997). WS operates on a relatively small percentage of the Wisconsin land mass (see Section 1.4 of this EA). The take of any wildlife species analyzed in this EA is a small proportion of the total population and is insignificant to the viability and health of the population (see Section 4.3, Appendix D). In addition, any reduction in the local population is temporary because immigration from adjacent areas and reproduction by the remaining animals replaces the animals removed during damage management operations as long as suitable habitat exists.

2.4.5 Wolf Damage Should be Managed by Hunters and Trappers.

WS provides professional wildlife damage management services at site-specific locations when requested by citizens experiencing a wildlife/human conflict. WS Personnel respond to requests for assistance in accordance with the Congressional direction provided to WS that authorizes the program as well as the WWMP (1999) and 50 CFR 17.40(o), and associated policies and guidelines for wolf damage management.

Additionally, wolf depredation management in Wisconsin is authorized by USFWS in accordance with the ESA. Authority to remove wolves from depredation sites for relocation prior to the final reclassification rule (50 CFR 17.40(o)) has occurred by permit to WDNR. WS personnel were also authorized under this permit to conduct wolf depredation management activities by the USFWS. Private citizens are not authorized by the USFWS to conduct wolf control activities (e.g., trapping or hunting) under the current reclassification rule (50 CFR 17.40(o)). In addition, WS proposes to only conduct damage management activities after a request is received from resource owners/managers when wolf(ves) are causing damage, or threats of damage or injury¹³.

If the Eastern DPS is delisted by USFWS, and wolves in Wisconsin are delisted by the State, private hunters and trappers may be able to participate in a regulated wolf harvest. WDNR would need to amend or revise the WWMP (1999) to provide a framework for a wolf harvest. The jurisdiction for managing resident wildlife rests with the WDNR (Appendix B), or if wolves are located on reservation lands it is the responsibility of the respective Tribes. When wolves are Federally delisted, management would become the responsibility of the WDNR, or the respective American Indian Tribe.

2.4.6 Appropriateness of Preparing an EA Instead of an EIS for Such a Large Area.

Some individuals might question whether preparing an EA for an area as large as the State of Wisconsin would meet the NEPA requirements for site specificity. If a determination is made through this EA that the proposed action would have a significant environmental impact, then an EIS would be prepared in accordance with NEPA. In terms of considering cumulative impacts, a single EA analyzing impact for the entire State should provide a better analysis than multiple

¹³ Actions to reduce wolf damage are within the control of Wisconsin State agencies or the USFWS; however APHIS may provide assistance when requested to the State in their management efforts. Therefore, Wisconsin State agencies or the USFWS could take action independent of WS or other Federal agencies. Primary control for wildlife management resides with the State of Wisconsin, thus calling into question the value of any Federal process in planning and decision making.

EA's covering several smaller areas.

In the most recent three year period, FY 2000 to FY 2002, WS only conducted wolf damage management in Zone 1 on three, four, and eight *Agreements for Control* in each year, respectively (MIS 2000-2002). The acres that WS conducted wolf damage management were 3,100 acres in FY00, 3,180 acres in FY01 and 5,135 in FY 02. This represented about 0.03%, 0.03% and 0.04%, respectively, of the land area of Management Zone 1 and 0.009%, 0.009 and 0.015%, respectively, of the land area of Wisconsin.

2.4.7 Aerial Gunning Concerns in Relation to Disturbance of Livestock and Wildlife

Most livestock in Wisconsin would be maintained near or in buildings during the time of year when WS would conduct aerial gunning activities. By maintaining livestock in or near buildings, they would be sheltered from most low-flying aircraft disturbance. In addition, livestock that are maintained in close proximity to people soon become acclimated to noises and other stimuli (i.e., running engines, vehicle horns, banging doors, lights) similar to what could be expected from aerial gunning. Additionally, in many of the areas where WS would conduct aerial gunning activities, other aircraft (i.e., National Guard helicopters, commercial and private aircraft) routinely fly over the areas. Therefore, any WS aerial gunning should have minimal effects on livestock. Further, WS personnel are directed to avoid areas with livestock, unless it would compromise their mission and would leave the areas as soon as possible if a disturbance was detected.

A number of studies have looked at responses of various wildlife species to aircraft over flights USDI (1995). USDA (1995) revealed that a number of studies have documented responses by certain wildlife species that suggest indirect adverse affects could occur. However, few if any studies have proven that aircraft over flights cause significant adverse impacts on individuals or populations, although the report stated it is possible to draw the conclusion that affects to wildlife populations could occur. It appears that some species will frequently or at least occasionally show adverse responses to even minor over flight occurrences. In general, however, it appears that the more serious potential adverse affects occur when over flights are *chronic* (i.e., they occur daily or more often over long periods of time). Chronic exposure situations generally involve areas near commercial airports and military flight training facilities. Aerial gunning as a tool to reduce wolf depredation on protected resources may have limited application by WS in Wisconsin. However, WS will determine in coordination with the WDNR when and where this method will be appropriate and effective.

Some examples of species or species groups that have been studied with regard to this issue and WS' determination of potential adverse affects from aerial gunning over flights are as follows:

- Colonial Waterbirds. Kushlan (1979) reported that low level (390 feet followed by a second flight at 200 feet) over flights of 2-3 minutes in duration by a fixed-wing airplane and a helicopter produced no "drastic" disturbance of tree-nesting colonial waterbirds, and, in 90% of the observations, the individual birds either showed no reaction or merely looked up. WS aircraft are unlikely to be flown over such species in Wisconsin because most aerial gunning operations would not occur near tree-nesting colonial waterbirds. Even if an over flight of a nesting colony occurred, it is apparent that little or no disturbance would result.
- Greater Snow Geese. Belanger and Bedard (1989, 1990) observed responses of greater snow geese (*Chen caerulescens atlantica*) to man-induced disturbance on a sanctuary

area and estimated the energetic cost of such disturbance. They observed that disturbance rates exceeding two per hour reduced goose use of the sanctuary by 50% the following day. They also observed that about 40% of the disturbances caused interruptions in feeding that would require an estimated 32% increase in nighttime feeding to compensate for the energy lost. They concluded that over flights of sanctuary areas should be strictly regulated to avoid adverse impacts. WS aerial gunning flights would rarely, if ever, occur over concentrations of greater snow geese. In addition, most WS flights would occur when vegetative ground cover is low; at times when geese would be out of the area. Thus, disturbance of migrating snow geese or any other waterfowl should be minimal to nonexistent.

- Cervids. Krausman et al. (1986) reported that only three of 70 observed responses of mule deer to small fixed-wing aircraft over flights at 150 to 500 feet above ground resulted in the deer changing habitats. The authors believed that the deer may have been accustomed to over flights because the study area was near an interstate highway which was followed frequently by aircraft. Mule deer are frequently seen from WS aircraft in western states and are sometimes temporarily disturbed as evidenced by their running and avoidance behavior. However, it is apparent that indirect adverse effects from this type of disturbance are minimal. VerCauteren and Hygnstrom (2002) noted when studying the efficacy of gunning to manage deer populations, that when deer were flown over during their censuses, they typically just stood up from their beds but did not flush. In addition, WS aerial gunning personnel frequently observe deer and antelope (*Antilocapra americana*) standing apparently undisturbed beneath or just off to one side of aircraft. In areas exposed to periodic low-level aircraft activity, animals seem to acclimate to low flying aircraft to the point that disturbance is unapparent (B. Mytton, formerly WDNR, pers. comm. 2002).
- Mountain Sheep. Krausman and Hervert (1983) reported that, of 32 observations of the response of mountain sheep (*Ovis canadensis*) to low-level flights by small fixed-wing aircraft, 60% resulted in no disturbance, 81% in no or "slight" disturbance, and 19% in "great" disturbance. The authors concluded that flights less than 150 feet above ground can cause mountain sheep to leave an area. Wisconsin WS would not conduct any aerial gunning in mountain sheep habitat.
- Bison. Fancy (1982) reported that only two of 59 bison (*Bison bison*) groups showed any visible reaction to small fixed-wing aircraft flying at 200 - 500 feet above ground. The study indicated bison are relatively tolerant of aircraft over flights.
- Raptors. Andersen et al. (1989) conducted low-level helicopter over flights directly at 35 red-tailed hawk (*Buteo jamaicensis*) nests and concluded their observations supported the hypothesis that red-tailed hawks habituate to low level flights during the nesting period. Their results also showed similar nesting success between hawks subjected to such over flights and those that were not. Military jets that flew low over the study area during training exercises did not appear to bother the hawks, and neither were they alarmed when the researchers flew within 100 feet in a small fixed-wing aircraft (White and Thurow 1985). White and Sherrod (1973) suggested that disturbance of raptors by aerial surveys with helicopters may be less than that caused by approaching nests on foot. Ellis (1981) reported that five species of hawks, two falcons, and golden eagles were "incredibly tolerant" of over flights by military fighter jets, and observed that, although birds frequently exhibited alarm, negative responses were brief and never limiting to

productivity. These studies indicate that over flights by WS aircraft should have no significant adverse impacts on nesting raptor populations.

WS' SOPs include measures intended to mitigate or reduce the effects on nontarget species populations are described in Section 3.6 of this EA. To reduce the risks of adverse affects to nontarget species, WS would select damage management methods that are as target-selective as possible or apply such methods in ways to reduce the likelihood of negatively affecting nontarget species.

2.5 ISSUES OUTSIDE THE SCOPE OF THIS ANALYSIS

2.5.1 Reclassification of Wolves. WS does not have the regulatory authority to maintain wolves as endangered or to downlist wolves in Wisconsin or in any other state. The Federal authority and responsibility for classifying wolves rests with the USFWS, and WDNR is responsible for the State classification of wolves in Wisconsin.

2.5.2 Wolves Should be Treated for Mange and Other Diseases. The decision to treat wolves for mange or any other diseases rests with the USFWS and/or WDNR.

2.5.3 Human are Intruding into Non-human Habitat. Humans have been living in areas with wolves for hundreds of years (Young and Goldman 1944). However, in the recent past, more humans have moved or consciously made the decision to live in areas that could be occupied by wolves. WS does not have the authority to restrict or limit in any way the area or places where humans can live, travel or otherwise inhabit.

2.5.4 Farmland Should be put Back to Prairie. WS does not have the authority, nor does this EA analyze the issues or impacts from converting farmland back to prairie. In addition, WS has very limited budgets and could not attempt to purchase farmland for the purposes of managing and convert it back to native prairies.

2.5.5 Maintain Travel Corridors. WS does not manage any lands in Wisconsin and therefore would not be able to maintain nor create travel corridors for wolves or any other wildlife species. WS does work with the USFWS and WDNR to reduce wolf damage, increase tolerance for wolves and thus help conserve wolves in Wisconsin.

2.5.6 Reduce or Eliminate Roads in Wilderness. As stated above, WS does not manage any lands in Wisconsin, including any wilderness areas and therefore could not reduce, eliminate, nor increase roads in wilderness areas. Those decisions rest with Federal or State land management agencies.

2.5.7 USFWS Wolf Policy is a "Rip-off". Whether the USFWS or any other agency policies are a "rip-off" is not controlled by WS and WS cannot change or modify those policies, therefore outside the scope of this EA.

2.5.8 Wisconsin Wolf Plan needs to be Scrapped. The WWMP (1999) was developed by the Wisconsin Wolf Advisory Committee of Stakeholders and ratified by the Committee and Natural Resources Board. During the plan's development, public input to the plan was sought and use for its development. WS does not have the authority to scrap the plan and this issue is outside of this EA.

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CHAPTER 3: ALTERNATIVES

3.1 INTRODUCTION

This chapter consists of six parts: 1) an introduction, 2) description of alternatives considered and analyzed in detail including the Proposed Action (Alternative 2), 3) a description of IWDM, 4) wolf damage management methods used or recommended, 5) a description of alternatives considered, but eliminated from detailed analysis, and 6) a table of mitigation measures and SOP. Alternatives were developed for consideration using the WS Decision Model (Slate et al. 1992), *"Methods of Control"* (USDA 1997, Appendix J) and the *"Risk Assessment of Wildlife Damage Control Methods Used by the USDA Animal Damage Control Program"* (USDA 1997, Appendix P). Five alternatives were recognized, developed, and analyzed in detail; five alternatives were considered but not analyzed in detail with supporting rationale. The five alternatives analyzed in detail are:

- Alternative 1. Non-lethal Wolf Damage Management Only (Current Program) (No Action Program).
- Alternative 2. Adaptive Integrated Wolf Damage Management (Proposed Action).
- Alternative 3. Lethal Only Program
- Alternative 4. Technical Assistance Only.
- Alternative 5. No WS Wolf Damage Management in Wisconsin.

3.2 DESCRIPTION OF ALTERNATIVES

3.2.1 Alternative 1. Non-lethal Wolf Damage Management Only (Current Program) (No Action Program).

The No Action alternative is a procedural NEPA requirement (40 CFR 1502.14(d)), is a viable and reasonable alternative that could be selected, and serves as a baseline for comparison with the other alternatives. The No Action Alternative, as defined here, is the current program and consistent with Council on Environmental Quality's (CEQ) definition (CEQ 1981). Selecting the No Action Alternative would not result in the cessation of existing practices; that result would be achieved by selection of Alternative 5.

Under this alternative, WS would only provide technical assistance regarding non-lethal techniques, conduct investigations and trap depredating wolves when requested by the WDNR. Captured wolves would be delivered to the WDNR for disposition. The current program is a collection of cooperative agreements with State agencies and private individuals to protect livestock, pets, and public health and safety (described in Chapter 1). WS activities have been conducted on private lands as requested by resource managers or landowners under "Agreements for Control".

WDNR compensation payments to livestock producers for wolf damage would also continue under this alternative. Compensation payments were initially based on the immediate market value of the lost property (Treves et al. 2002). By 1992, negotiations with livestock producers in Wisconsin led State authorities to modify compensation payments to match the autumn market value, even for livestock killed early in the spring. The WDNR determines compensation for

hunting dogs losses based on recommendations from WS, and documentation obtained from the owner.

Education/extension programs would be conducted by Wisconsin WS to provide resource owners with assistance and information concerning the use and effectiveness of non-lethal wolf damage management methods. WS would encourage resource owners to use livestock guarding dogs, and other non-lethal methods which could include husbandry, habitat modification, fencing, and electronic guards/frightening devices. WS would also loan frightening devices to resource owners (when equipment is available) and assist livestock producers in obtaining livestock guarding dogs if requested. Resource owners would be responsible for implementing non-lethal methods.

3.2.2 Alternative 2. Adaptive Integrated Wolf Damage Management (Proposed Action).

This alternative would allow for a WS Program where wolf damage management would be closely coordinated with the WDNR, other State agencies, USFWS or Tribes, as appropriate. The damage management program would be designed to meet wolf management objectives balanced with the needs of multiple resources (agricultural and natural resources, property and pet owners, and public health and safety). The damage management program analyzed in this alternative would operate according to and in compliance with the conservation goals established for wolves in Wisconsin and strategies outlined in the WWMP (1999), Eastern Wolf Recovery Plan (USFWS 1992) and 50 CFR 17.40(o).

In determining the damage management strategy, preference would be given to practical and effective non-lethal methods. However, non-lethal methods may not always be applied as a first response to each damage problem. The most appropriate response could often be a combination of non-lethal and lethal methods, or there could be instances where application of lethal methods alone would be the most appropriate strategy (see Appendix C or USDA 1997, Appendix J).

WDNR compensation payments to livestock producers for wolf damage would also continue under this alternative. Further, education/extension programs would also be conducted by Wisconsin WS to provide resource owners with assistance and information concerning the use and effectiveness of non-lethal wolf damage management methods. Under this alternative, WS would also encourage resource owners to use livestock guarding dogs, and other non-lethal methods which could include husbandry, habitat modification, fencing, and electronic guards/frightening devices. WS would also loan frightening devices to resource owners (when equipment is available) and assist livestock producers in obtaining livestock guarding dogs if requested. Resource owners would be responsible for implementing non-lethal methods.

WS personnel would minimize the effects on non-target animals T/E species and the environment by utilizing the most selective and effective available methods. The USFWS has concurred that WS wolf damage management activities would have no effect or not likely adversely affect Federally listed animal and bird T/E species in Wisconsin (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003; L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001). The WDNR has also concurred that WS wolf damage management activities would have no effect or not likely to adversely affect State listed animal and bird T/E species (S. Holtz, WDNR letter to D. Nelson, WS March 23, 2002). Lethal methods would only be used as necessary to prevent or reduce damage after non-lethal methods are considered and used as appropriate.

3.2.3 Alternative 3. Lethal Only Program

Under this alternative, only lethal operational wolf damage management and technical assistance would be provided by WS. Requests for information regarding non-lethal management approaches would be referred to WDNR, USFWS or private businesses or organizations, if appropriate. Individuals or agencies might choose to implement WS lethal recommendations, implement non-lethal methods or other methods not recommended by WS, contract for WS damage management services, use contractual services of private businesses, use volunteer services, or take no action. WS damage management services would be conducted as authorized by various Federal and State regulations. This alternative would not allow WS to consider the use of physical exclusion, livestock guarding dogs, electronic frightening devices or other non-lethal devices, even where these non-lethal methods may be beneficial. Lethal methods used by WS would include trapping and snaring followed by euthanasia, and shooting.

Shooting would be an effective method to remove a small number of wolves in a damage situation, especially where trapping is not feasible. Shooting could be conducted at night with the aid of spotlights or night-vision equipment.

Traps and snares could be used to capture wolves and lethally remove by euthanasia. A more complete description of these methods is available in Appendix C and USDA (1997 Appendix J). These techniques are usually implemented by WS personnel because of the training required to use such devices.

3.2.4 Alternative 4. Technical Assistance Only.

Under this alternative, WS would not conduct any operational wolf damage management in Wisconsin. The entire WS program would consist of technical assistance, with WS making recommendations when requested. However, private landowners, contractors, or others could conduct their own wildlife damage management on Federal, State, county and private lands under the provisions of the ESA, 4(d) rule regulations of final reclassification rule (50 CFR 17.40(o)), the WWMP (1999) and agencies policies and regulations.

This "technical assistance only" alternative would place the immediate burden of operational wolf damage management work on State agencies, American Indian Tribes, individuals or resources owners. Individuals experiencing wolf damage would, independently or with WS recommendations, carry out and fund control activities. Individual resource owners suffering losses could implement wolf damage management as part of the cost of doing business, or a State agency could assume a more active role in providing operational damage management.

3.2.5 Alternative 5. No WS Wolf Damage Management in Wisconsin.

This alternative would eliminate all WS or any other current Federal program for wolf damage management (operational and technical assistance) on all land classes within Wisconsin. However, State and county agencies and private individuals could conduct wolf damage management. WS would not be available to provide technical assistance or make recommendations to individuals or entities experiencing wolf damage. WS would not attempt to resolve wolf conflicts with operational damage management. Damage management methods applied by non-agency personnel could be used contrary to their intended or legal use, or in excess of what is recommended or necessary due to reduction in oversight and control. Illegal use of pesticides could increase (Schueler 1993). WDNR or local government entities likely would not be adequately funded to provide effective and consistent operational control, which may result in less tolerance of wolves or on the landscape and an increase in the illegal kill of wolves.

A *No Control* alternative was analyzed by the USFWS (USDI 1979) and was dismissed because it was considered an invalid alternative. A *No Control* alternative was also evaluated in USDA (1997) and was also dismissed as an invalid alternative.

3.3 INTEGRATED WILDLIFE DAMAGE MANAGEMENT

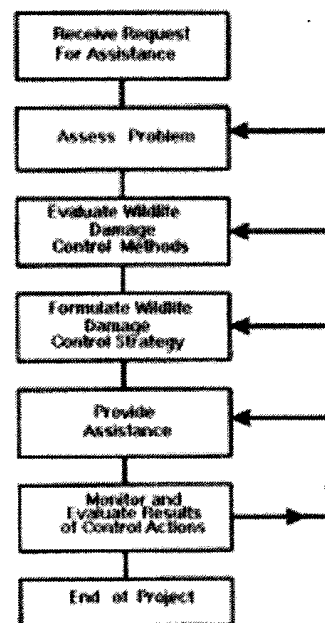
USDA (1997, Appendix J) describes methods currently used by the WS program. Several of these were considered in this assessment because of their potential use in reducing wolf damage to agricultural and natural resources, property, pets, and human health and safety. A listing and more detailed description of the methods used by Wisconsin WS for wolf damage management can be found in Appendix C of this EA.

3.3.1 Introduction. During more than 80 years of resolving wildlife damage problems, WS has considered, developed, and used numerous methods for reducing wildlife damage problems (USDA 1997). WS' efforts have involved the research and development of new methods, improvement of existing methods, and the implementation of effective strategies to resolve and prevent wildlife damage.

Usually, the most effective approach to resolve wildlife damage is to integrate the use of several methods simultaneously or sequentially. IWDM is the implementation and application of safe and practical methods for the prevention and reduction of damage caused by wildlife based on local problem analyses and the informed judgment of trained personnel. The WS Program applies IWDM, commonly known as Integrated Pest Management, to reduce damage applying the WS Decision Model (Slate et al. 1992) discussed in section 3.2.3 (Figure 3-1).

The philosophy behind IWDM is to implement effective management techniques in the most cost-effective manner possible while minimizing the potentially harmful effects to humans, target and non-target species, and the environment. IWDM draws from the largest possible array of options to create a combination of techniques for the specific situations. IWDM may incorporate cultural practices, habitat modification, animal behavior modification, removal of individual animals, local population reduction, or any combination of these, depending on the characteristics of the specific damage problems.

FIGURE 3-1. WS DECISION MODEL



3.3.2 Integrated Wolf Damage Management Strategies used by WS consist of:

3.3.2.1 Technical Assistance Recommendations (implementation is the responsibility of the requester): Wisconsin WS personnel provide information, demonstrations and advice on available wolf damage management techniques. Technical assistance includes demonstrations on the proper use of some management devices (e.g., propane exploders, electronic guards, etc.) and information on animal husbandry, wildlife habits, habitat management and animal behavior modification. Technical assistance is generally

provided following an on-site visit or verbal consultation with the requester. Typically, several management strategies are described to the requester for short and long-term solutions to damage problems; these strategies are based on the level of risk, need and practical application. Technical assistance may require substantial effort by WS personnel in the decision making process, but the actual implementation is the responsibility of the requester.

3.3.2.2 Operational Damage Management (assistance conducted or supervised by WS personnel): Operational damage management assistance is implemented when the problem cannot be resolved through technical assistance and when Cooperative Agreements enable WS to conduct operational damage management. The initial investigation defines the nature and history of the problem, extent of damage, and the species responsible for the damage. Professional skills of WS personnel are often required to resolve problems effectively, especially if the problem is complex dealing with several species or sensitive species, requiring the direct supervision of a wildlife professional. WS considers the biology and behavior of the damaging species and other factors using the WS Decision Model (Slate et al 1992).

3.3.3 Preventive Damage Management is applying wildlife damage management strategies before damage occurs, based on historical problem probability and other data. All non-lethal methodologies, whether applied by WS or resource owners, are employed to prevent damage from occurring and therefore fall under this heading. When requested, WS personnel provide information and conduct demonstrations, or take action to prevent additional losses from recurring. For example, in areas where calf depredations have occurred historically, WS may provide information about livestock guarding animals, fencing or other husbandry techniques.

3.3.4 Corrective Damage Management is applying wolf damage management to stop or reduce current losses. As requested and appropriate, WS personnel would provide information and conduct demonstrations, or take lethal operational action to prevent additional losses from occurring. For example, in areas where verified and documented livestock depredations are occurring, WS may provide information about livestock guarding animals, fencing or husbandry techniques, or coordinate and conduct operational activities with the WDNR to stop losses.

3.3.5 WS Decision Model used for Decision Making¹⁴.

USDA (1997) and Slate et al. (1992) describe the Decision Making procedures used by WS to determine management strategies or methods applied to specific damage problems (USDA 1997: pages 2-20 to 31, Appendix N). WS personnel use a thought process for evaluating and responding to damage complaints and requests for assistance (Figure 3-1). The WS Decision Model considers the following factors before selecting or recommending damage management methods and techniques:

- Species responsible for the damage
- Magnitude, geographic extent, frequency, historical damage and duration of the problem
- Status of target and non-target species, including T/E species
- Local environmental conditions
- Potential biological, physical, economic, and social impacts
- Potential legal restrictions

¹⁴ The WS Decision Model is not a written process but a mental problem-solving process common to most, if not all professions to determine appropriate actions to take.

Costs of damage management¹⁵

The decision making process is a procedure for evaluating and responding to damage complaints. WS personnel are frequently contacted after requesters have tried non-lethal techniques and found them to be inadequate for reducing damage to an acceptable level. WS personnel assess the problem and methods are evaluated for their availability (legal and administrative) and suitability based on biological, economic and social considerations. Following this evaluation, the methods deemed to be practical for the situations are formed into a management strategy. After the management strategy has been implemented, monitoring and evaluation of the strategy is conducted to assess the effectiveness of the strategy. If the strategy is effective, the present need for management is ended.

When damage continues intermittently over time, WS personnel and the requester monitor and reevaluate the situation. If one method or a combination of methods fails to stop damage, a different strategy is implemented. In terms of the WS Decision Model (Slate et al. 1992), most damage management efforts consist of a continuous feedback loop between receiving the request and monitoring the results, with the damage management strategy reevaluated and revised periodically if necessary.

3.3.6 Local Decision Making Process

The WS program in Wisconsin follows the "Co-managerial approach" to solve wildlife damage or conflicts as described by Decker and Chase (1997). Within this management model, WS provides technical assistance regarding the biology and ecology of wolves and effective, practical, and reasonable methods available to the local decision maker(s) to reduce wildlife damage. This includes non-lethal and lethal methods. Technical assistance on alleviating damage caused by wolves is also available from other State, Federal, and private organizations. WS and other State and Federal wildlife or wildlife damage management agencies may facilitate discussions at local community meetings when resources are available, and make recommendations. Resource owners and others directly affected by wolf damage or conflicts have direct input into the strategies to resolve the problem(s). They may implement management recommendations provided by WS or others, or may request management assistance from WS, other wildlife management agencies, local animal control agencies, or private businesses or organizations. Local decision makers compare the benefits versus the damage when deciding which methods would be implemented. Local decision makers must weigh the cost of implementing each methodology or a series of methodologies. These decision makers include community leaders, private property owners/managers, and public property owners/managers.

3.4 WOLF DAMAGE MANAGEMENT METHODS AUTHORIZED FOR USE OR RECOMMENDED BY WS

USDA (1997 Appendix J) describes methods currently used by the WS program. Several of these were considered in this assessment because of their potential use in reducing wolf damage to agricultural and natural resources, property and pets, and human health and safety. A listing and more detailed description of the methods used by Wisconsin WS for wolf damage management is found in Appendix C of this EA.

¹⁵ The cost of management may sometimes be secondary because of overriding environmental, legal, public health and safety, animal welfare or other concerns

3.4.1 Non-lethal Wolf Damage Management Methods:

Best Management Practices implemented by livestock producers to prevent or mitigate wolf damage might include: 1) maintaining healthy, well-fed animals, 2) pregnancy testing cattle, 3) properly disposing of dead livestock carcasses through rendering, burying, liming, or burning, 4) conducting calving or lambing operations in close proximity to the farmyard, when practical, 5) penning vulnerable livestock at night where practical, 6) monitoring livestock on a regular basis to detect any disease, natural mortality, or predation, and 7) incorporating non-lethal methods. Property owners and land managers could implement their own best management practices or request the assistance of other agencies or private organizations to implement them, or take no action.

Exclusion may be used to prevent or limit access by predators to livestock pastures, calving or lambing areas, or livestock confinement areas. Several designs of anti-predator fencing have been developed and tested. Where practical and cost effective, sheep, calves or other vulnerable livestock may be penned near farm buildings at night.

Frightening Devices/Repellents^{16, 17} may include conditioned taste aversion (aversive conditioning), light/siren devices (electronic guard or radio activated guard), flashing highway barricade lights, strips of flagging placed on fencelines, fladry or bells placed on livestock.

Livestock Guarding Animals such as guarding dogs may be used to protect livestock from wolves. Livestock guarding animals may distract, deter, repel or attract wolves that could depredate on livestock.

Compensation for Wolf Damage in the form of monetary payments to livestock producers for full or partial value for domestic animals killed. Such payments may be made by State, Federal, or private organizations.

Capture and Relocation of problem wildlife species is a technique that is sometimes used to alleviate wildlife damage problems. The success of a relocation effort, however, depends on the potential for the problem individuals to be captured efficiently and the existence of an appropriate relocation site (Nielsen 1988). While relocation may be appropriate in some situations when the species population is low, wolves are relatively abundant in much of the suitable habitat in Wisconsin and relocation is not necessary for the maintenance of viable populations. Because wolves are relatively abundant in Wisconsin, wolves relocated into suitable habitat are very likely to encounter other wolves with established territories. Wolves are highly territorial and the newly introduced wolves may trespass into already established wolf territories and be attacked and killed by the resident pack (Mech 1970).

¹⁶ Frightening devices and repellents often only produce the desired result for a short time until individual wildlife become accustomed to the disturbance (Pfeifer and Goos 1982, Conover 1982, Shivak 2001).

¹⁷ Lithium chloride has been tested as a taste aversion agent to condition predators to avoid livestock. Despite extensive research, the efficacy of this technique remains unproven (Conover et al. 1977; Sterner and Shumake 1978; Burns 1980, 1983; Horn 1983; Johnson 1984; Burns and Connolly 1980, 1985). The most severe limitation of taste aversion is the fact that predatory behavior is genetically wired in two distinct and independent components: kill and eat. A strong aversion to tainted meat bait does not translate to a strong aversion to kill live prey (Conover and Kessler 1994, Shivak 2001). In addition, lithium chloride is currently not registered for this use by the EPA or the Food and Drug Administration (FDA), and therefore cannot legally be used or recommended for this purpose.

Relocated wolves may also disperse long distances from the release site (Fritts 1983). Relocated wolves can potentially return to the damage sites from which they were removed (Fritts 1984), or after dispersal movements, cause damage problems at the dispersal site. In this case, the original damage problem has simply been shifted from one property to another.

Leg-hold traps can be effectively used to capture a variety of mammals. Although wolves could be live-captured by this method, they could be euthanized. Effective trap placement, pan-tension devices, and the selection and placement of appropriate lures by trained WS personnel contribute to the leg-hold trap's selectivity.

Foot snares are devices consisting of a cable loop and a locking device that captures an animal around their foot or lower leg. The cable may be activated around the lower leg with a spring (Aldrich) or trap-type (Belisle) device. The foot snare can be modified with a stop on the snare cable.

3.4.2 Lethal Damage Management Methods¹⁸:

These methods involve damage management specifically designed to lethally remove wolves in certain situations to a level that stabilizes, reduces, or eliminates damage. The amount of removal necessary to achieve a reduction of wolf damage varies according to the effectiveness of other damage management strategies, the damage situation, and the level and likelihood of continued depredations.

Shooting is selective for the target species and may involve the use of either a shotgun or rifle and night vision equipment.

Aerial gunning typically involves the shooting of target animals from fixed-winged aircraft or helicopters, and is used on all lands where authorized and determined appropriate. Aerial gunning consists of visually sighting target animals in the problem area and shooting them with a shotgun from the aircraft. Shooting typically results in a relatively quick and humane death. Local depredation problems can often be resolved quickly through aerial gunning.

All aerial gunning operations are required to comply with WS Directive 2.260, the WS Aviation Safety Manual, and the WS Aviation Operations Manual. All aircraft, agency pilots, contract pilots and WS aerial gunners must be certified by the WS Aviation Manager. Aerial gunning would only be used on lands where it is authorized and determined by WS to be an appropriate method.

Good visibility is required for effective and safe aerial gunning and relatively clear and stable weather conditions are necessary. Summer conditions limit the effectiveness of aerial gunning as heat reduces cervid activity, and visibility is greatly hampered by vegetative ground cover. High temperatures, which reduce air density, and extreme cold temperatures may affect low-level flight safety and would restrict aerial gunning activities.

¹⁸ No toxicants are currently registered for wolf damage management in Wisconsin.

Land Restraint Snares are devices consisting of a cable loop and a locking device that are placed in travel ways. Snares can be used as killing devices but can also be modified with a stop on the snare cable for a live-capture device.

Sodium Pentobarbital (Beuthanasia-D) is registered for euthanasia of dogs, but legally may be used on other animals if the animal is not intended for human consumption. Barbiturates depress the central nervous system in descending order, beginning with the cerebral cortex, with unconsciousness progressing to anesthesia. The primary advantage of barbiturates is the speed of action on the animal. Barbiturates induce euthanasia smoothly, with minimal discomfort to the animal (AVMA 1993) after an animal has been anesthetized.

3.5 ALTERNATIVES CONSIDERED BUT NOT IN DETAIL, WITH RATIONALE

3.5.1. Bounties. Payment of funds for killing wildlife (bounties) suspected of causing economic losses is not considered effective to reduce wolf damage at this time. This alternative will not be considered by WS in detail because:

- WS does not have the authority to establish a bounty program and a bounty system would not be allowed as long as wolves are a listed species.
- Bounties are generally not as effective in reducing damage because depredating individuals/local populations are not specifically targeted.
- Circumstances surrounding take of animals is completely unregulated.
- No effective process exists to prohibit taking of animals from outside the damage management area for compensation purposes.

3.5.2. Eradication and Suppression. An eradication alternative would direct all WS program efforts toward planned, total elimination of wolves. However, this alternative will not be considered by WS in detail because:

- The attempted eradication of established wolf populations would result in a continued or renewed listing under the provisions of the ESA, thus providing increasing levels of State and Federal protection.
- Eradication of wolves is not acceptable to most members of the public.

It is also not realistic, practical, or allowable under present WS policy to consider large-scale population suppression as the basis of the WS program. Typically, WS activities in Wisconsin are conducted on small portions of the area inhabited by depredating species or the species causing a threat to public health or safety (See Section 1.4 of this EA).

3.5.3 Damage Management Through Birth Control. Under this alternative, wolf populations would be managed through the use of contraceptives. Wolves would be sterilized or contraceptives administered to limit their ability to produce offspring. However, at present, there are no approved chemical or biological contraceptive agents for wolves. A wolf contraceptive, chemosterilant or immunocontraceptive, if delivered to a sufficient number of individuals, could temporarily suppress local breeding populations by inhibiting reproduction. Reduction of local populations would result from natural mortality and inhibited reproduction. No wolves would be killed directly with this method; however treated wolves may continue to cause damage.

Contraceptive measures for mammals can be grouped into four categories: surgical sterilization, oral contraception, hormone implantation, and immunocontraception (the use of contraceptive

vaccines). These techniques would require that wolves receive either single, multiple, or possibly daily treatment to successfully prevent conception. The use of this method would be subject to approval by Federal and State Agencies. This alternative is limited because: (1) it may take a number of years of implementation before the wolf population would decline, and, damage may continue for a number of years; (2) surgical sterilization would have to be conducted by licensed veterinarians, which would therefore be extremely expensive; (3) it is difficult to effectively live trap or chemically capture the number of wolves that would need to be sterilized in order to effect an eventual decline in the population; (4) no chemical or biological agents for contracepting wolves has been approved for use by State and Federal regulatory authorities.

Sterilization may be useful as an experimental technique to reduce depredation in some highly specialized situations in the future. In coyotes, breeding pairs with pups are most likely to depredate on sheep (Till and Knowlton 1983, Till 1992, Bromley and Gese 2001, Blejwa et al. 2002), and the same may be true for wolves and cattle (A. P. Wydeven, WDNR, pers. comm. 2003). Sterilized coyote (Bromley and Gese 2001) and wolf (Mech et al. 1996) packs continue to maintain territories, and do not seem to adversely affect survival of sterilized adults. In chronic areas, sterilization may reduce the need to remove problem wolves by keeping the wolf population low, and eliminating pup production (Haight and Mech 1997). Sterilization continues to be experimental and would only be done after approval from State and Federal regulatory agencies and if it can be carefully monitored.

The use of sterilization is somewhat limited at this time, and would normally only be done as part of an experimental procedure, in which careful monitoring is done of the treated wolves. Any attempts to sterilize wolves would be initiated by and coordinated with WDNR.

3.6 MITIGATION AND STANDARD OPERATING PROCEDURES (SOPs) FOR WILDLIFE DAMAGE MANAGEMENT TECHNIQUES

Mitigation measures are any features of an action that serve to prevent, reduce, or compensate for impacts that otherwise might result from that action. The WS program, nationwide and in Wisconsin, uses many mitigation measures and these are discussed in detail in USDA (1997, Chapter 5). The following mitigation measures apply to some or all of the alternatives, as indicated in the columns.

- Alternative 1. Non-lethal Damage Management (No Action).
- Alternative 2. Integrated Adaptive Wolf Damage Management (Proposed Program)
- Alternative 3. Lethal Management Only
- Alternative 4. Technical Assistance
- Alternative 5. No Federal WS Wolf Damage Management in Wisconsin

| Mitigation Measures by Alternative | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| <i>Animal Welfare and Humaneness of Methods Used by WS</i> | | | | | |
| Research would continue to improve the selectivity and humaneness of management devices and these would be implemented into the WS Program. | X | X | X | X | |
| Pan-tension devices are used to reduce the incidence of smaller non-target animal capture in leg-hold traps. | X | X | X | | |
| Breakaway snares have been developed and implemented into the program. (breakaway snares are designed to break open and release with tension exerted by larger nontarget animals such as deer and livestock.) | X | X | X | | |

| Mitigation Measures by Alternative | 1 | 2 | 3 | 4 | 5 |
|---|----------|----------|----------|----------|----------|
| Chemical immobilization/euthanasia procedures that do not cause pain are used. | X | X | X | | |
| Traps and snares would be checked consistent with WDNR regulations. | X | X | X | | |
| No leg-hold traps or snares would be set within 30 feet of any exposed bait or animal carcass to prevent capture of raptors. | X | X | X | | |
| The use or recommendations of non-lethal methods such as guard dogs, scare devices, and other methods, would be encouraged when appropriate. | X | X | | X | |
| Wolf damage management would follow guidelines as specified and agreed upon in MOUs and depredation plans. | X | X | X | | |
| On public lands, vehicle use would be limited to existing roads unless authorized by the land management agency. | X | X | X | X | |
| No lethal preventive damage management would be conducted by WS unless authorized by the WDNR or USFWS. | X | X | X | X | |
| <i>Safety concerns regarding WS' use of traps and snares</i> | | | | | |
| The WS' Decision Model, designed to identify the most appropriate wildlife damage management strategies and their impacts, is used for WS activities. | X | X | X | X | |
| Traps and snares would be placed so that captured animals would not be readily visible. | X | X | X | | |
| Warning signs would be posted on main roads and/or trails leading into any areas where traps or snares were being used. These signs would be removed at the end of the damage management activities. | X | X | X | | |
| No traps or snares would be used by WS within ¼ mile of any residence, community, or developed recreation site, unless requested by the owner of a privately-owned property or an official from the appropriate land management agency. | X | X | X | | |
| <i>Concerns about impacts of WS' activities on T/E species, other species of special concern, and cumulative effects</i> | | | | | |
| WS has consulted with the USFWS regarding the nationwide program and would continue to implement all applicable measures identified by the USFWS to ensure protection of T/E species. | X | X | X | X | |
| WS consulted with the USFWS on the impacts of the program to T/E species in Wisconsin and adopted reasonable and prudent measures related to Wisconsin. | X | X | X | X | |
| WS personnel are directed to resolve depredation problems by taking action against individual problem animals, or local populations or groups. | X | X | X | X | |
| Wolf damage management would be conducted only with the concurrence of the WDNR or USFWS. | X | X | X | X | |
| Wolf damage management would be conducted only when and where a need exists. | X | X | X | X | |
| Leg-hold traps or spring activated foot snares set near baits would incorporate tension devices to preclude capture of eagles and other nontarget species. | X | X | X | | |

| Mitigation Measures by Alternative | 1 | 2 | 3 | 4 | 5 |
|--|----------|----------|----------|----------|----------|
| WS personnel would contact the appropriate management agency to determine eagle nest and roost locations where WS activities are proposed. | X | X | X | | |
| No pesticides would be used by WS during wolf damage management operations. | X | X | X | | |
| The appropriate land manager and the USFWS would be notified as soon as possible, and always within at least 5 days, if a gray wolf is caught or killed. | X | X | X | | |
| <i>Cultural Resources/American Indian concerns</i> | | | | | |
| WS solicited input from American Indian Tribes in the analysis area | X | X | X | X | |
| This EA will be provided to the American Indian Tribes in a Pre-Decisional form to determine if all cultural issues have been addressed. | X | X | X | X | |
| The Wisconsin State Historical Preservation Office has reviewed WS' activities in relationship to archeological interests. | X | X | X | X | |

CHAPTER 4: ENVIRONMENTAL CONSEQUENCES

4.1 INTRODUCTION

Chapter 4 provides information needed for making informed decisions on the wolf damage management objectives outlined in Chapter 1, the issues and affected environment discussed in Chapter 2, and the alternatives discussed in Chapter 3. This chapter analyzes the environmental consequences of each alternative. The analysis of environmental effects which could be expected from each action alternative takes into account WS decision making process (Slate et al. 1992), guidance provided from WS Directives, USFWS (1992), the WWMP (1999), and 50 CFR 17.40(o).

4.2 ANALYSIS OF SOCIAL CONSEQUENCES, RESOURCE USE AND SIGNIFICANCE

This section analyzes the environmental consequences using Alternative 1, the no action alternative, as the baseline when comparing the other alternatives to determine if the real or potential adverse affects are greater, lesser or the same (Table 4-4). The No Action alternative is a procedural NEPA requirement (40 CFR 1502.14(d)) and is a viable and reasonable alternative that could be selected. The No Action Alternative, as defined here, is consistent with CEQ (1981).

4.2.1 Social and Recreational Concerns

Social and recreational concerns are discussed throughout the EA, in WWMP (1999), and in USDA (1997) whereby pertinent portions have been incorporated by reference. Social and recreational concerns are also analyzed against the alternatives analyzed in detail in Section 4.3 of this EA.

4.2.2 Irreversible and Irretrievable Commitments of Resources:

The following resource values within Wisconsin would not be adversely impacted by any of the alternatives analyzed in this EA: soils, geology, minerals, water quality/quantity, flood plains, wetlands, visual resources, air quality, prime and unique farmlands, aquatic resources, timber, and range. These resources will not be analyzed further.

Other than minor uses of fuels for motor vehicles and electrical energy for office maintenance, there are no irreversible or irretrievable commitments of resources. Based on these estimates, the Wisconsin WS program produces very negligible impacts on the supply of fossil fuels and electrical energy.

4.2.3 Cumulative and Unavoidable Impacts.

Cumulative and unavoidable impacts of each alternative to wolf and non-target populations are discussed and analyzed in this chapter (Section 4.3) and affects from this assessment are discussed in relationship to wildlife species/groups. This EA recognizes that the total annual removal¹⁹ of individual wolves from their population by all causes is the cumulative mortality. Estimating wildlife densities is not precise and populations and habitat are often dynamic, therefore, professional judgment is required to account for unknowns and variables. Some of the

¹⁹ It is recognized that the other mortality of wildlife (i.e., road kills, disease, natural mortality, etc.) occurs but no reliable system exists for recording this information.

variables include things such as the ability of habitats to support higher populations, habitat variability affects on population stability, disease, prey abundance and recruitment. In addition, wildlife populations can change considerably from one year to the next due to factors such as drought, food shortages or disease. As a result, any population estimate would only be for a given point in time and population levels can change rapidly. The WDNR however has monitored and estimated wolf populations for many years (Figure 1-1, Figure 1-3). It is anticipated that future State, Tribal, local or private actions combined with WS' proposed wolf damage management will contribute to the conservation of the gray wolf in and around Wisconsin. Also, the WDNR has prepared a Wisconsin Wolf Management Plan (WWMP 1999) and developed guidelines for managing depredating wolves, which provides for the continued existence and conservation of the gray wolf in Wisconsin. It is not anticipated that any future State, Tribal, local or private actions are to occur in the analysis area considered in this EA or the USFWS BO that would adversely impact the gray wolf associated with the proposed action Wisconsin (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003).

Analysis of Wisconsin WS' wolf "take" from 2000 through 2002, combined with other known mortality, indicates that cumulative annual impacts are not significant, and through close coordination and consultation with the WDNR wolf mortality is not expected to adversely affect wolf conservation (see Section 4.3.1.1 and 4.3.2.1). In addition, the USFWS has concurred that the WS wolf damage management program would have no effect or not likely adversely affect Federally listed animal and bird T/E species in Wisconsin (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003; L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001). The WDNR has also concurred that WS wolf damage management activities would have no effect or not likely to adversely affect State listed animal and bird T/E species (S. Holtz, WDNR letter to D. Nelson, WS March 23, 2002). Further, the Wisconsin WS program is not expected to have any adverse cumulative effects on non-target wildlife or their habitats (see Section 1.7.2, 1.7.5, 1.7.6 and 2.3.1) and wolf damage management, as implemented by WS, would not jeopardize public or pet health and safety.

4.2.4 Alternative Consistency with Forest Service LRMPs.

Before an Alternative can be considered for implementation on Forest Service System lands, it must be consistent with the land management and/or resource management plans. These are termed Land and Resource Management Plans (LRMP) or more commonly "*Forest Plans.*" If the Alternative is consistent with the LRMP, no additional action would be necessary by the Forest Service.

If an alternative that is inconsistent with the LRMP is selected in the decision process, the Forest Service could amend the LRMP to be consistent with the EA. The decision would not be implemented on the Forest until the inconsistency is resolved either through amendment of the LRMP or modification of the alternative(s). Any inconsistencies would be identified and resolved before the wolf damage management project is conducted. A work plan would be developed by WS with each National Forest before any wildlife damage management would be conducted, or in the rare instance, wolf damage management would be conducted under *emergency only control.*

4.2.5 Evaluation of Significance

Each major issue is evaluated under each alternative and the direct, indirect and cumulative impacts were analyzed. NEPA regulations describe the elements that determine whether or not an impact is "*significant.*" Significance is dependent upon the context and intensity of the

action. The following factors were used to evaluate the significance of impacts in this EA that relate to context and intensity (adapted from USDA 1997) for this proposal:

4.2.5.1 Magnitude of the Impact (size, number, or relative amount of impact) (intensity). The “*Magnitude*” analysis for the alternatives analyzed in this EA follows the process described in USDA (1997: Table 4-2). Magnitude is defined in USDA (1997) as “. . . a measure of the number of animals killed in relation to their abundance.” Magnitude may be determined either quantitatively or qualitatively. Qualitative analysis is based on population trends and harvest data or trends and modeling. “*Other Harvest*” includes the known mortality, and other information obtained from the WDNR. “*Total Harvest*” is the sum of the Wisconsin WS kill combined with the “*Other Harvest*.”

4.2.5.2 Duration and Frequency of the Impact (temporary, seasonal impact, year round or ongoing) (intensity) (Duration and frequency of an operational program related to assisting the WDNR and USFWS maintain viable populations, in part, would be determined by the WDNR and the goals and management responsibilities of the WDNR).

4.2.5.3 Likelihood of the Impact (intensity). This factor evaluates any given set of circumstances against the probability of occurrence. Experience in wolf damage management, knowledge of the biology, ecology, behavior, etc. of the target and non-target animals and their environments, and applying professional judgment are utilized in predicting the intensity and frequency of impact.

4.2.5.4 Geographic Extent (context) (the actions could occur anywhere in Wisconsin where damage management has been requested, agreements for such actions are in place and action is warranted, as determined by implementing the WS Decision Model (Slate et al. 1992)). Actions would generally be limited to the immediate project area, and under “*Agreement for Control*,” MOU or other comparable document. However, implementation of effective strategies could occur in other areas in Wisconsin impacted by wolf(ves). Actions would be limited to areas receiving damage from wolves or threats from wolves.

4.2.5.5 Legal Status of the species that may be removed or conformance with regulations and policies that protect the resource in question (context). Wolves in Wisconsin are managed as a protected species with no regulated sport harvest. In situations where wolves are causing damage, there are legal protections whereby Federal and State agencies respond to requests and resolve the damage or threat of damage. Consequently, citizens experiencing problems with wolves should be familiar with Federal and State wildlife laws, including the ESA, and regulations.

4.3 ISSUES ANALYZED BY ALTERNATIVES

NEPA requires Federal agencies to determine whether their actions would have a “*significant impact on the quality of the human environment*.” A declining population of a resident wildlife species does not necessarily equate to a “*significant impact*” as defined by NEPA if the decline is collectively condoned or desired by the people that live in the affected human population. It is reasonable and proper to rely on the representative form of government within a State as the established mechanism for determining the “*collective*” desires or endorsements of the people of a Wisconsin. WS abides by this philosophy and defers to the collective desires of the people of the State of Wisconsin by complying with State laws and regulations that govern the take or removal of resident wildlife. Although the analysis herein indicates wolf populations are not being impacted to the point of causing a population decline, if at some point in the future they are, then such a decline would not necessarily constitute a “*significant*” impact as defined

by NEPA so long as the actions that cause the decline are in accordance with State law, and with the desires of the people of Wisconsin.

Quantifying absolute wildlife densities is not a precise science. Wildlife biologists and managers must estimate densities by applying experience and professional judgment to account for unknowns and variables, such as the ability of habitats to support populations and recruitment. The WDNR believes that wildlife populations can fluctuate considerably from one year to the next due to factors such as weather, disease, food resources, predation, etc. As a result, any population estimate made for any given point in time could change rapidly if conditions change. Assessments for this EA are based on population trends and impact assessments provided from Federal and State natural resource agencies and personnel to insure that no adverse wolf population impacts occur¹.

Four key potential issues of this program have been identified and each of these issues is analyzed for each alternative. The four issues are effects on: 1) viability of gray wolf populations in Wisconsin, 2) public health and safety from wolf management, 3) maintain effective and selective resource protection methods and tool, and 4) potential for some WS methods to take non-target animals.

4.3.1 Alternative 1. Non-lethal Damage Management Only (Current Program) (No Action Program).

There have been no unqualified successes using non-lethal tools (Clark et al. 1996), and managers require a wider variety of thoroughly tested alternative methods to solve the growing number of problems between humans and wildlife (Shivak and Martin 2001). There is no one technique that will be useful and appropriate in all situations. An understanding of animal behavior and having a variety of techniques available, may allow the development of affordable and effective strategies/techniques for limiting depredations.

4.3.1.1 Viability of Gray Wolf Populations in Wisconsin.

This alternative would continue the current program of non-lethal damage management and wolf populations would be expected to continue to increase until available habitat is saturated. Because this alternative would not allow WS to conduct any operational lethal wolf damage management, there would be no direct WS impacts to the statewide wolf population. Several methods included in this alternative have been and are currently being utilized to reduce wolf predation on livestock in Wisconsin. Improvements by farmers in animal husbandry practices and the utilization of livestock guarding animals or frightening devices has the potential to reduce wolf damage and the number of wolves that would be removed. These methods, however, have not proven 100% effective in preventing wolf damage in other areas, including Minnesota and Wisconsin. Results of field tests or observations of the effectiveness of various non-lethal methods of wolf damage management are discussed in Appendix C of this EA.

Non-lethal methods also will not prevent the expansion of wolves into more agricultural or residential areas where the chances for conflicts are greater. The WWMP (1999) established wolf management zones for Wisconsin and recommended management strategies for each zone (Figure 1-5). Low densities were recommended for Zone 3 and no wolves were recommended for Zone 4. Currently, Wolf Management Zones 1 and 2

¹ It is recognized that other mortality/take (e.g., disease, predation, automobiles, natural mortality, etc.) occurs throughout Idaho but no reliable system exists for recording this information.

have the highest or expanding densities of wolves; these are the zones where wolf damage management is most often requested in order to minimize livestock depredations. Wolf range expansion can probably not be controlled with non-lethal methods.

Under Alternative 1, only non-lethal methods to alleviate damage could be implemented by WS. A State compensation program would continue to be a valuable method for reimbursing farmers or pet owners for losses from wolves. Such a program is helpful in reducing animosity towards wolves and in preventing a large wolf population from being an economic burden on individuals. How long people would be appeased by compensation payments is unknown. If non-lethal methods failed to resolve wolf damage, property owners might request lethal damage management actions from other entities. Some property owners may take illegal, unsafe, or environmentally harmful action against local populations of wolves out of frustration. Lethal control actions by private individuals are less likely to be very specific or very humane, and could potentially have much more impact on the wolf population than focused lethal actions by WS. Impacts on wolf populations would be variable dependent upon actions taken by other governmental agencies and affected individuals.

Wolves would continue to increase where lethal removal was low. Wolves would continue to disperse to areas with low populations or populations could stabilize from vehicle collisions, illegal kills, disease and intraspecific strife. Once delisted, and exceeding 350 wolves, a sport harvest could be considered by the WDNR, but it may be difficult to adequately regulate wolf depredation by public harvest (WWMP 1999). Some resource owners may remove wolves by themselves, or hire trappers during a legal harvest season. After State and Federal delisting, resource owners may also obtain permits from the WDNR to allow them to trap or shoot wolves outside of the regular season, but WS would be restricted to only implementing non-lethal methods. Some resource owners may take illegal, unsafe, or environmentally harmful action against local populations of wolves out of frustration or ignorance.

Since 1997, 41 wolf captures have been made by WS to reduce damages, losses, or threats to the public. Two have died in captivity, five wolves were captured by WS and euthanized by WDNR under permit by USFWS (Table 4-1), and 34 were relocated by the WDNR. In addition, "other wolf mortalities" have occurred in Wisconsin from various causes and reasons (Table 4-2). Most of these other known mortalities occurred outside of State or Federal agency control and are expected to continue to occur if the wolf population remains stable, or "other mortalities" will probably increase as the wolf population increases (A. P. Wydeven, WDNR, pers. comm. 2003). Many of the "other mortalities" occurred because: 1) of vehicle accidents as wolves crossed highways, 2) were caused by wolves acting aggressively toward wolves that were not pack members, 3) diseases or other causes of natural mortality, or 4) they were illegally killed.

Based on the above information, WS' or the WDNR's impact on Wisconsin wolf populations is of the low magnitude. Wolf populations have increased dramatically during the past 20 years (Figure 1-1, Figure 1-3) and are expected to continue to increase until suitable habitat has been saturated. There could, however, be different impacts to wolves from other entities that implement damage control strategies to reduce wolf damage. This could take the form of increased private trapping, if allowed, a State agency taking a larger role in lethal wolf damage management, or control efforts by individual resource owners or managers.

Table 4-1. Wisconsin Estimated Wolf Population and Known Mortality.

| Year | Estimated Wolf Population | Known Mortality | Wolves Euthanized | % of Population Euthanized | Total % Mortality of Population |
|-------|---------------------------|-----------------|-------------------|----------------------------|---------------------------------|
| 2000 | 248 | 26 | 0 | 0% | 10.5% |
| 2001 | 257 | 27 | 0 | 0% | 10.5% |
| 2002 | 327 | 62 | 1 | 0.3% | 19.0% |
| 2003* | 335 | 22 | 4 | 1.2% | 6.6% |

* Population information from 1/1/03 to 5/28/03.

Table 4-2. Causes of Known Mortality in the Wisconsin Wolf Population.

| Year | Accidents | Shot | Disease | Vehicle Collisions | Other Wolves | Unknown | Damage Management |
|--------|-----------|------|---------|--------------------|--------------|---------|-------------------|
| 2000 | 1 | 2 | 6 | 10 | 4 | 3 | 0 |
| 2001 | 1 | 8 | 5 | 8 | 4 | 0 | 0 |
| 2002 | 1 | 18 | 12 | 22 | 5 | 3 | 1* |
| 2003** | 0 | 4 | 4 | 7 | 2 | 1 | 4 |

* This animal was euthanized because it posed a public health concern and appeared to be a wolf-dog hybrid.

** Population information from 1/1/03 to 5/28/03.

4.3.1.2 Public Health and Safety from Wolf Damage Management.

This alternative would result in no Federal operational lethal wolf damage management program in Wisconsin; therefore the use of lethal methods would be at the discretion of individuals or agencies that conduct the wolf damage management activities. WS would not make recommendations on lethal methods if non-lethal methods failed to reduce damage, but implementation of lethal methods would be outside of WS' control and by some other entity. Impacts from non-WS personnel would be variable based upon the knowledge and skill of the person implementing wolf damage management methods. Increased use of the same methods by less skilled trappers or resource owners, and greatly reduced restrictions on how wildlife damage management would be conducted may result in an increased risk to the public and pets.

If wolf populations continue to increase without a damage management program in place, there may be potential threats to public and pet health and safety from wolves that enter people's yards or attack their pets. Additionally, individuals may attempt to solve wolf damage problems through illegal shooting, trapping, snaring, or poisoning. As a result of these illegal actions, there could be increased risks to public and pet safety from improper or unscrupulous use of these methods.

In addition under this alternative, WS could only use non-lethal methods if a situation occurs where wolves are presenting a risk to public or pet health and safety. This Alternative would likely result in increased risks to human and pet safety for some situations over those identified in Alternative 2 or 3.

4.3.1.3 Maintain Effective and Selective Resource Protection Methods and Tools.

Under this alternative WS would not conduct any lethal operational wolf damage

management and primarily provide technical assistance to resource owners to reduce wolf damage. Therefore, WS would not be able to respond with all the methods or possibly the appropriate methods under this Alternative in comparison to Alternative 2. Implementation of lethal damage management methods would be the responsibility of the WDNR, therefore, concerns about effectiveness and selectivity of lethal methods used by WS are not relevant. Some type of wolf damage management would most likely be implemented by resource owners or State or Federal agencies and possibly by private or sport trappers or hunters in the future (WWMP 1999). However, the methods used under other programs would not be directed by WS and thus could be less selective than WS' methods. Damage management efforts by individuals with limited training and experience would be less likely to take offending individual wolves and more likely to take nontarget species.

WS could be less effective at keeping wolf predation losses as low as could be expected for Alternative 2. By restricting damage management methods, WS would be unable to effectively resolve some depredation problems. Decreased effectiveness is tied to the logistics of getting to areas with depredation problems and possibly having to use less effective damage management methods.

4.3.1.4 Potential for Some WS Methods to Take Non-target Animals.

Under this alternative, there would be no WS implemented lethal damage management activities and hence no direct mortality to wildlife populations or T/E species from WS' activities. However, in the absence of an integrated wolf damage management program, some type of lethal wolf damage management could be implemented by resource owners, or a State agency could play a more active role in lethal wolf removal in damage or threat situations. These activities, however, would not be implemented by WS and therefore no adverse impact from WS' wolf damage management activities. Damage management actions and the methods used by non-WS personnel could affect non-target species populations or T/E species if these agents are inexperienced with the methods and techniques that are used to reduce wolf damage. Some individuals frustrated with wolf management policies might attempt to illegally shoot, trap, snare, or poison wolves with potential detrimental effects on non-target species or T/E species. In addition, without WS' IWDM operational assistance, some resource owners may be motivated to consider use of more economical forms of control than those practiced by WS (Schueler 1993, USDA 1997). Illegal use of toxicants represents one of the cheapest forms of predator removal, but it also presents the greatest environmental risks (Allen et al. 1996). Risks to T/E species would probably be greater under Alternative 1 than Alternative 2, the proposed action of this EA, or Alternative 3.

Two federally protected T/E species that potentially could be affected by WS wolf damage management activities are the bald eagle and the Canada lynx. Wisconsin and most of the Great Lakes Region has a large, expanding population of bald eagles. Eagles are common in the wolf range especially during spring and fall migration. Eagles scavenging on carcasses of livestock killed by wolves could accidentally be captured in traps or snares set by WS personnel around the carcasses. WS policy, however, prohibits agency personnel from setting traps closer than 30 feet to an exposed carcass. This "setback" distance reduces the likelihood of capturing any type of scavenging bird landing or walking in the immediate vicinity of the carcass. Wolf traps are also equipped with pan-tension devices and baits or lures that are less attractive to scavenging birds are

utilized when trapping around livestock carcasses. Wisconsin WS personnel have not captured any eagles while conducting wolf damage management activities.

In the Final Rule (USDI 2000), the USFWS concluded that the single factor threatening the contiguous Distinct Population Segment (DPS) of lynx is the inadequacy of existing regulatory mechanisms. The Final Rule also stated that lynx were likely captured incidentally in the past during regulated and unregulated trapping for other predators, and still lynx persisted throughout much of their historic range. Therefore, it appears that the USFWS does not believe that current trapping or wolf damage management activities adversely affect lynx in the United States DPS.

USFWS and Minnesota WS wolf damage management personnel have captured bobcats but no Canada lynx during 26 years of wolf damage management activities in Minnesota. Canada lynx occurred historically in Wisconsin in very low numbers, but currently they are considered rare or nonexistent in the State. A review of records shows that no lynx have been accidentally/incidentally captured by Wisconsin WS over the past 17 years. In addition, it is not expected that wolf damage management would have potential to affect lynx based on available lynx population data and habitat descriptions (USDI 2000) and the fact that no lynx has ever been captured by WS in Wisconsin or Minnesota. Therefore, WS has determined that the use of current wolf damage management methods to reduce or prevent resource damage or predation would not likely to adversely affect the lynx.

Should a lynx be accidentally captured by WS personnel, it could be released because WS personnel carry and are trained in the use of wildlife immobilizing drugs. In addition, if WS captured a lynx and WDNR personnel were available, a radio-collar could be attached to the lynx prior to release to track its movements and identify areas lynx use in Wisconsin and a possible resident population (A. P. Wydeven, WDNR, pers. comm. 2003).

In addition, the USFWS has concurred that the WS wolf damage management program would have no effect or not likely adversely affect Federally listed animal and bird T/E species in Wisconsin (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003; L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001). The WDNR has also concurred that WS wolf damage management activities would have no effect or not likely to adversely affect State listed animal and bird T/E species (S. Holtz, WDNR letter to D. Nelson, WS March 23, 2002). WS' SOPs include measures intended to mitigate or reduce the effects on non-target species populations and WS' mitigation and SOPs that are designed to reduce the adverse effects on non-target species and to avoid jeopardizing T/E species' populations.

An uncontrolled, expanding wolf population could also negatively impact other wildlife species, especially wolf prey species. Wolves are an important predator on ungulate populations and may suppress or limit the populations of prey species under certain conditions.

4.3.2 Alternative 2. Adaptive Integrated Wolf Damage Management (Proposed Action).

This alternative describes the proposed Wisconsin WS wolf depredation management program. The proposed action is for WS to reduce or alleviate site specific wolf damage through the use of an adaptive IWDM strategy that combines technical assistance and operational (non-lethal and

lethal) damage management when requested and after a need is established. Alternative 2 would allow WS to provide wolf damage management assistance to reduce or eliminate the negative effects of wolf predation to livestock, pets, property and reduce any potential risk to human health and safety in an effective, humane, and comprehensive manner. All or some of the described non-lethal and lethal damage management methods would be incorporated into program activities as determined on a case-by-case basis. By integrating a variety of methods, resource protection goals are more easily and effectively attainable.

This integrated approach alternative would reduce damage more than any other alternative considered in this EA. Negative effects resulting from this alternative would be minimal with respect to humans, wolves, non-target species, and other environmental components. This alternative should reduce the use of inconsistent, haphazard, and possibly harmful wolf damage management practices.

4.3.2.1 Viability of Gray Wolf Populations in Wisconsin.

Under this Alternative, WS would use an adaptive IWDM approach and methods selected for use under this alternative would ensure maximum damage resolution with minimal negative environmental impacts to reduce wolf damage or the threat of wolf damage to livestock, property, pets, and human health and safety. Unlike Alternative 3, the use of preventive measures (best management practices) and non-lethal methods could be used as part of an IWDM approach. A State compensation program would also continue to be a valuable method for reimbursing farmers and pet owners for losses from wolves. Such a program is helpful in reducing animosity towards wolves and in preventing a large wolf population from being an economic burden on individuals. Livestock producers would be provided information animal husbandry and non-lethal methods that may help reduce the potential for wolf damage at farms or mitigate such damage. Depending upon how practical or effective these practices or methods proved to be, there could be fewer requests for assistance to resolve depredating wolf problems.

This alternative differs from the current program (Alternative 1) by allowing WS lethal removal of a limited number of problem wolves in accordance with 4(d) rule regulations (50 CFR 17.40(o)) and the WWMP (1999). When wolves kill livestock at farms, selective lethal damage management would be used to remove only those problem wolves involved in the depredations. As with Alternative 1, a wide range of non-lethal methods may also be employed, including exclusion, changes in husbandry practices, habitat modification, guarding animals, and scaring devices, as part of the overall IWDM approach. The use of non-lethal methods would have little or no effect on wolf populations.

This alternative could result in a localized decrease in the wolf population at the specific site where the damage management occurs, however, the long-term effects would be greater tolerance for wolves thus conserving wolf populations, and wolves would return and inhabit the areas if suitable habitat remained (A. P. Wydeven, WDNR, pers. comm. 2003). The amount of time until new wolves move into the area would vary depending on the habitat type, time of year, and the population density of wolves in nearby areas.

Under this alternative it is not anticipated that more than 15% of the estimated late winter population of wolves would be removed. Wolf biologists and managers generally agree that healthy, productive wolf populations can sustain annual harvests of 28-53 % without permanently reducing their numbers (Mech 1970, Peterson et al. 1984, Fuller 1989,

Ballard et al. 1987, 1997). Damage management actions would only be initiated at farms where verified damage had occurred, and activities would be conducted in accordance with USFWS regulations (50 CFR 17.40 (o)) and WWMP (1999).

Local population reductions as the result of depredation control activities would have no significant impact on the overall Wisconsin wolf population.

Wolf Reproduction and Mortality

Some captive females have been observed as capable of conceiving at 10 months (Medjo and Mech 1976), but sexual maturity in the wild usually is attained at 22 months and often wolves do not breed until their third or subsequent years. In one study (Rausch 1967) females breeding for the first time shed an average of 6.1 ova and implanted 5.4 embryos, whereas older females shed an average of 7.3 ova and implanted 6.5 embryos. Five adult females found in Wisconsin in the 1980s and early 1990s, had an average of 5.2 (range 3-8) fetuses. Gestation lasts about 63 days and average litter size is about six, with extremes recorded being from one to 11 (Mech 1974). A wolf pack generally produces one litter per year (Packard and Mech 1980); however, well-documented cases of births of more than one litter/pack/year have been recorded both in captivity (Paquet et al. 1982) and in the wild (Murie 1944, Van Ballenberghe 1983). In such cases, adults in the pack often divide their time between dens and will unite the two family groups after the pups become mobile (Murie 1944). Occasionally, subordinate wolves that have left the pack are known to have produced pups (Peterson et al. 1984).

In most areas where wolves exist in North America, human-caused mortality is likely the greatest mortality factor (Rausch 1967, Ream and Mattson 1982, Keith 1983, Peterson et al. 1983, Wydeven et al. 1995), including Wisconsin (Table 4-2). Other factors include disease (Carbyn 1982), malnutrition (Mech 1977), intraspecific strife (Mech 1977), and predation (Joslin 1966, Ballard 1980). Direct encounters between packs can lead to deaths (Mech 1977) when pack members fight and kill wolves from neighboring packs.

An indirect measure of mortality is the percentage of young (pups) in a population. High-density "unexploited" wolf populations generally have a lower ratio of pups to adults than do low-density exploited populations (Keith 1983). Pimlott et al. (1969) stated that a proportion of 15-30% pups in a population was indicative of a stable population, whereas 40-50% pups indicated a moderately to heavily exploited population. Longevity of wolves in the wild is up to 14 years old (Ballard and Gipson 2000), and one captive wolf is recorded to have lived 16 years (Young and Goldman 1944).

Mech (1970) suggested that wolf pups had a survival rate of 6-43% from birth to age 5-10 months. Survival rates from age 5-10 months to age 17 months increased to 55%, and survival after 17 months was 80%. In Wisconsin, estimated pup survival from birth to mid winter (9-11 months) average 28% annually (Wydeven 1996). Generally during periods of major disease outbreak, survival declines to <20%, but during spurts in population growth, pup survival often exceeded 30%.

Population Density and Dynamics

Mech (1970) suggested that the growth of pack size was determined by social bonds, competition for food, and the number of breeding units in a given area. Pimlott (1970) and Keith (1983) suggested that the density of wolf populations was regulated by

intrinsic (reproductive) mechanisms and was independent of food availability. Packard and Mech (1980) later concluded that earlier claims that wolf populations were limited by social factors were only partly correct and that food availability was more important.

Wolf populations have a high potential growth rate, which is seldom realized because not all adult females bear pups and in utero and postnatal mortality is common (Rausch 1967). Mech (1970) concluded that wolf populations could replace annual losses of about 50%. However, it has been shown that a harvest of more than 40% during early winter can lead to population declines in the following year (Ballard et al. 1981, Gasaway et al. 1983), and others suggest the harvest should be kept near 28 to 30% of the fall population (Keith 1983, Fuller 1989).

This alternative could result in a localized decrease in the wolf population at the specific site where the damage management occurs. However, WS only conducts damage management on a small portion of Wisconsin (see Section 1.4) and no adverse long-term impact would occur to the statewide wolf population because of WS wolf damage management. WS and the WDNR would conduct and monitor activities under close coordination and consultation (A. Wydeven, WDNR, pers. comm. 2003). Wolf populations would probably continue to increase because WS activities would only be conducted on a request basis and only in situation where damage management actions are warranted. Wolf populations can withstand removal rates of 28% -30% (Keith 1983, Fuller 1989) and maintain stable population levels. In recent years about 6% (4-9%) of the wolf population in Minnesota was removed annually due to damage management actions (Paul 2001). Only 20% of Wisconsin packs were involved in livestock and poultry depredation during a 10-year period (Treves et al. 2002), and most years only 7% of packs depredate on livestock (Wydeven et al. in prep). Thus, even if all packs depredating on livestock were completely eliminated each year (normally WS is successful in trapping about 1/2 of sites in Wisconsin and Minnesota), only about 7% of the population would be removed. Most years likely removal of wolves due to damage management activities will probably be 3-5% of the state wolf population, and falls well below the potential harvest of 28 to 30%. Therefore, WS' impact on the Wisconsin wolf population would be of a low magnitude.

Furthermore, new wolves would likely re-inhabit the site where other wolves were removed as long as suitable habitat exists. Dispersing wolves can establish new territories if suitable areas and mates are available. Such areas are either unoccupied spaces or sections at the edge of existing territories. Record long-distance movements²⁰ were recorded by Van Camp and Gluckie (1979) at 416 mi and Fritts (1983) at 550 mi. In Wisconsin dispersing wolves have travel as far as 298 mi, and average straight line distance for dispersing wolves is about 71 mi (Wydeven et al. 1995). Wolves in Wisconsin were able to settle into an isolated block of habitat in the middle of the state in the 1990s, and travel across 30 mi of unsuitable habitat (farmland and urban) (Wydeven et al 1998). Wandering wolves that fail to find areas may be reintegrated into natal packs (Fritts and Mech 1981), retain their lone wolf status, or be killed by a pack (Marhenke 1971). The amount of time until new wolves move into the area would vary depending on the habitat type, time of year, and population densities in surrounding areas; in our experience in Wisconsin, areas initially occupied by wolves would be re-colonized in 3-24 months. Areas that consist of favorable habitat will likely be readily reoccupied by

²⁰ Distances were converted from kilometers to miles.

wolf packs (Mladenoff et al. 1995), but marginal areas may remain unoccupied for longer periods.

All damage management activities would be closely coordinated with the WDNR, and the viability of wolves in Wisconsin would not be adversely affected, in part, for the reasons above. The cumulative and indirect impacts of this program are sufficiently discussed in the Eastern Timber Wolf Recovery Plan (USFWS 1992) and WWMP (1999). No additional cumulative or indirect impacts are expected as a result of any actions taken based on the analysis in this environmental assessment.

The successful resolution or abatement of wolf-livestock conflicts would help to reduce the controversy that surrounds wolf recovery, which in turn, would help facilitate the successful recovery of wolves not only in Wisconsin but also elsewhere. Therefore, it is concluded that the Adaptive Integrated Wolf Damage Management Alternative would have a low magnitude of impact on Wisconsin wolf populations.

4.3.2.2 Public Health and Safety from Wolf Damage Management.

WS would implement a statewide program of wolf damage management based on an IWDM approach described in Chapter 3 of this EA. Based on the risk assessment from USDA (1997, Appendix P) the environmental and human health and safety risks associated with WS' wildlife damage management are low. The greatest risks to human health and safety from WS' use of damage management methods are incurred by the WS Specialists who use these methods. During the FY 98 through FY 02 analysis period, there were no reported injuries to WS personnel or members of the public related to WS' use of any wolf damage management methods. Mitigation measures that address safety concerns about WS' use of traps, snares, aerial gunning and shooting are listed at the end of Chapter 3.

WS methods of aerial gunning, shooting and trapping pose minimal or no threat to public and pet health and safety. All firearm safety precautions are followed by WS when conducting damage management and WS complies with all laws and regulations governing the lawful use of firearms. Shooting with shotguns or rifles would sometimes be used to reduce wolf damage when lethal methods are determined to be appropriate. Shooting is selective for target species and may be used in conjunction with spotlights and night vision equipment.

All aerial gunning operations are required to comply with WS Directive 2.260, the WS Aviation Safety Manual, and the WS Aviation Operations Manual. All aircraft, agency pilots, contract pilots and WS aerial gunners must be certified by the WS Aviation Manager. Aerial gunning would only be used on lands where it is authorized and determined by WS to be an appropriate method.

Good visibility is required for effective and safe aerial gunning and relatively clear and stable weather conditions are necessary. Summer conditions limit the effectiveness of aerial gunning as heat reduces cervid activity, and visibility is greatly hampered by vegetative ground cover. High temperatures, which reduce air density, and extreme cold temperatures may affect low-level flight safety and would restrict aerial gunning activities.

WS also uses firearms to euthanize captured wolves as humanely as possible. WS traps and snares are strategically placed to minimize exposure to the public and pets. Appropriate warning signs are posted on properties where traps or snares are set to alert the public of their presence.

Firearm use is very sensitive and a public concern because of misuse. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within 3 months of their appointment and a refresher course every 2 years afterwards (WS Directive 2.615). WS employees, who use firearms as a condition of employment, are required to certify that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

This alternative also could provide relief from damage or threats to public health and safety to people who would have no relief from such damage or threats if non-lethal methods were ineffective or impractical. Many people directly affected by wolf depredations on domestic animals, especially pets that are killed in their yards, express concern for human safety and insist upon the removal of wolves from their property when they cause damage. Wolves that have become habituated to humans (bold) are especially unpredictable.

4.3.2.3 Maintain Effective and Selective Resource Protection Methods and Tools.

The most effective approach to resolving wildlife damage, including wolf damage, is to integrate or consider the use of several methods simultaneously or sequentially. An IWDM approach to reducing damage is the implementation and application of safe and practical methods for the prevention and reduction of damage based on local problem analyses and the informed judgment of trained personnel. Wisconsin WS Program would apply IWDM through the WS Decision Model (Slate et al. 1992) discussed in section 3.2.3 (Figure 3-1).

The philosophy behind IWDM is to implement effective management techniques in a cost-effective manner while minimizing the potentially harmful effects to humans, target and non-target species, and the environment. IWDM draws from the largest possible array of options to create a combination of techniques for the specific situations. IWDM may incorporate cultural practices, habitat modification, animal behavior modification, removal of individual animals, local population reduction, or any combination of these, depending on the characteristics of the specific damage problems. Thus, this alternative would allow Wisconsin WS the best opportunity to resolve and reduce wolf damage conflicts in a timely and effective manner.

Several of the methods that would be employed under the Adaptive Integrated Wolf Damage Management Alternative would be typically 100% selective for target species. These methods include aerial gunning, shooting from the ground, and euthanasia. While the methods discussed above are typically near 100% selective for taking only the target species, other methods such as leg-hold traps and snares are somewhat less selective (Table 4-3). However, all the non-target animals captured by WS while conducting wolf damage management during 2000 to 2002 were released unharmed.

4.3.2.4 Potential for Some WS Methods to Take Non-target Animals.

WS would implement a statewide program of wolf damage management based on an IWDM approach described in Chapter 3 of this EA. Based on the risk assessment from USDA (1997 Appendix P) the environmental and nontarget risks associated with WS' wildlife damage management are low. Of the wolf damage management methods proposed for use, leg-hold traps and snares pose the greatest risk to nontarget species. Some of the non-target species, such as white-tailed deer (*Odocoileus virginianus*), black bear (*Ursus americana*), bobcat (*Felix rufus*), and feral dogs, may occasionally be captured during wolf damage management (Table 4-3). WS does not expect the rate of non-target species take to substantially increase above current program levels and the take of non-target animals by WS is well below the sustainable harvest level. Using available harvest data and the annual take by WS, the magnitude is considered extremely low for WS take of non-target species in Wisconsin.

Table 4-3. Number of Non-target Species Captured¹ by WS Personnel in Wisconsin Compared to Commercial Fur Harvest or Public Take.

| Species | WS Non-Target Take | | | Fur Harvest/Public Take | | |
|-------------------|--------------------|---------|---------|-------------------------|---------|---------|
| | FY 2000 | FY 2001 | FY 2002 | 2000 | 2001 | 2002 |
| White-tailed Deer | 0 | 0 | 1 | 615,293 | 444,384 | 372,076 |
| Black Bear | 0 | 0 | 2 | 3,075 | 2,986 | NA |
| Coyote | 0 | 3 | 5 | NA | 13,513 | NA |
| Bobcat | 0 | 1 | 0 | 280 | 152 | NA |
| Red Fox | 0 | 2 | 1 | NA | 7,881 | NA |

* Note – NA – data are not available from the WDNR

Thus, cumulative take appears to be far beneath the level that would begin to cause a decline in these populations. Any non-target animals that may incidentally be taken by WS are expected to be minimal and should have no adverse affect on statewide non-target populations. In addition, many of these non-target animals can be released alive but others may have to be euthanized because of capture-related injuries. Domestic pets that may be captured in these devices and accompanied by humans can be released unharmed. WDNR has concurred with this finding (Holtz 2002, A. P. Wydeven, WDNR, pers. comm. 2003).

Two Federally protected T/E species that potentially could be affected by WS wolf damage management activities are the bald eagle and the Canada lynx. Wisconsin and most of the Great Lakes Region has a large, expanding population of bald eagles. Eagles are common in the wolf range especially during spring and fall migration.

Eagles scavenging on carcasses of livestock killed by wolves could accidentally be captured in traps or snares set by WS personnel around the carcasses. WS policy, however, prohibits agency personnel from setting traps closer than 30 feet to an exposed carcass. This "setback" distance reduces the likelihood of capturing any type of scavenging bird landing or walking in the immediate vicinity of the carcass. Wolf traps are also equipped with pan-tension devices and baits or lures that are less attractive to scavenging birds are utilized when trapping around livestock carcasses. Wisconsin WS personnel have not captured any eagles while conducting wolf damage management activities.

In the Final Rule (USDI 2000), the USFWS concluded that the single factor threatening the contiguous Distinct Population Segment (DPS) of lynx is the inadequacy of existing

regulatory mechanisms. The Final Rule also stated that lynx were likely captured incidentally in the past during regulated and unregulated trapping for other predators, and still lynx persisted throughout much of their historic range. Therefore, it appears that the USFWS does not believe that current trapping or wolf damage management activities adversely affect lynx in the United States DPS.

USFWS and Minnesota WS wolf damage management personnel have captured bobcats but no Canada lynx during 26 years of wolf damage management activities in Minnesota. Canada lynx occurred historically in Wisconsin in very low numbers, but currently they are considered rare or nonexistent in the State. A review of records shows that no lynx have been accidentally/incidentally captured by Wisconsin WS over the past 17 years. In addition, it is not expected that wolf damage management would have potential to affect lynx based on available lynx population data and habitat descriptions (USDI 2000) and the fact that no lynx has ever been captured by WS in Wisconsin or Minnesota. Therefore, USFWS has determined that the use of current wolf damage management methods to reduce or prevent resource damage or predation would not likely to adversely affect lynx (L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001).

Should a lynx be accidentally captured by WS personnel, it could be released because WS personnel carry and are trained in the use of wildlife immobilizing drugs. In addition, if WS captured a lynx and WDNR personnel were available, a radio-collar could be attached to the lynx prior to release to track its movements and identify areas lynx use in Wisconsin and a possible resident population (A. P. Wydeven, WDNR, pers. comm. 2003).

In addition, the USFWS has concurred that the WS wolf damage management program would have no effect or not likely adversely affect Federally listed animal and bird T/E species in Wisconsin (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003). The combined damage management take of wolves in Wisconsin follows the special 4(d) rule described in 50 CFR §§ 17.40(o)(2)(iv) and potential incidental take associated with damage management is not expected adversely affect wolf populations (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003). The WDNR has also concurred that WS wolf damage management activities would have no effect or not likely to adversely affect State listed animal and bird T/E species (S. Holtz, WDNR letter to D. Nelson, WS March 23, 2002). WS' SOPs include measures intended to mitigate or reduce the effects on non-target species populations and WS' mitigation and SOPs that are designed to reduce the adverse effects on non-target species and to avoid jeopardizing T/E species' populations. Mitigation measures to address concerns about impacts to non-target and T/E species are discussed in Appendix C and in the list of mitigation measures in Table 3-1. WS is not exempt from Wisconsin dry land trapping regulations which require dry land trap sets to be checked at least once each day. Daily trap checks minimize the amount of time target and non-target animals remain in traps, and improve the likelihood that a non-target animal may be released unharmed.

4.3.3 Alternative 3. Lethal Only Program

4.3.3.1 Viability of gray wolf populations in Wisconsin.

This alternative could result in a localized decrease in the wolf population at the specific site where the damage management occurs. If wolves were lethally removed at all damage sites, WS anticipates (with continued growth of Wisconsin's wolf population and

the continued upward long-term trend in wolf-livestock conflicts) that less than 15% of the previous late winter estimate wolf population wolves would potentially be killed annually by WS during depredation damage management. However, no adverse long-term impact would probably occur on the statewide wolf population, because WS and the WDNR would conduct and monitor activities under close coordination and consultation (A. Wydeven, WDNR, pers. comm. 2003, J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003).

Wolf populations would probably continue to increase because WS activities would only be conducted on a request basis and only in situation where damage management actions are warranted. Wolf biologists and managers generally agree that healthy, productive wolf populations can sustain annual harvests of 28-53% without permanently reducing their numbers (Mech 1970, Peterson et al. 1984, Fuller 1989, Ballard et al. 1987, 1997). Therefore, the impacts on wolf populations are expected to be similar to those described in Alternative 2.

In addition, only 20% of Wisconsin packs were involved in livestock and poultry depredation during a 10-year period (Treves et al. 2002), and most years only 7% of packs depredate on livestock (Wydeven et al. in prep). Thus even if all packs depredating on livestock were completely eliminated each year (normally WS is successful in trapping about 1/2 of sites in Wisconsin and Minnesota), at most only about 7% of the population would be removed. Most years' likely removal of wolves due to damage management activities will probably be 3-5% of the State's wolf population which falls well below the level of take that would cause population declines (e.g., harvest of 28 to 30%).

Furthermore, new wolves would likely re-colonize the site where other wolves were removed as long as suitable habitat exists. Dispersing wolves can establish new territories if suitable areas and mates are available. Such areas are either unoccupied spaces or sections at the edge of existing territories. Record long-distance movements were recorded by Van Camp and Gluckie (1979) at 416 mi and Fritts (1983) at 550 mi. In Wisconsin dispersing wolves have traveled as far as 298 mi, and average straight line distance for dispersing wolves is about 71 mi (Wydeven et al. 1995). Wolves in Wisconsin were able to settle into an isolated block of habitat in the middle of the state in the 1990s, and traveled across 30 mi of unsuitable habitat (farmland and urban) (Wydeven et al. 1998). Wandering wolves that fail to find areas may be reintegrated into natal packs (Fritts and Mech 1981), retain their lone wolf status, or be killed by a pack (Marhenke 1971). The amount of time until new wolves move into the area would vary depending on the habitat type, time of year, and population densities in surrounding areas; in our experience in Wisconsin, areas initially occupied by wolves would be re-colonized in 3-24 months. Areas that consist of favorable habitat will readily be reoccupied by wolf packs (Mladenoff et al. 1995), but marginal areas may remain unoccupied for a longer period of time.

4.3.3.2 Public Health and Safety from Wolf Damage Management.

This alternative would result in only WS lethal wolf damage management in Wisconsin. The low risks associated with WS' use of lethal damage management methods would not increase risks to public health or safety, and in some situations lethal damage management may provide for a safer environment for the public or pets. However, under this Alternative, WS could only make recommendations on lethal methods. Technical assistance recommendations involving lethal methods would be implemented by another

entity if allowed or authorized. Increased use of the same methods by less skilled trappers or resource owners, and greatly reduced restrictions on how wildlife damage management would be conducted may result in an increased risk to the public and pets.

WS methods of aerial gunning, shooting and trapping pose minimal or no threat to public and pet health and safety and would have effects similar to those described in Alternative 2. WS' traps and snares are strategically placed to minimize exposure to the public and pets. Appropriate warning signs are posted on properties where traps or snares are set to alert the public of their presence.

All firearm safety precautions are followed by WS when conducting damage management and WS complies with all laws and regulations governing the lawful use of firearms. Shooting with shotguns or rifles would sometimes be used to reduce wolf damage problems when lethal methods are determined to be appropriate. Shooting is selective for target species. WS uses firearms to euthanize captured wolves as humanely as possible would be conducted to reduce handling and stress to the animal.

Firearm use is very sensitive and a public concern because of safety issues. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within 3 months of their appointment and a refresher course every 2 years afterwards (WS Directive 2.615). WS employees, who carry firearms as a condition of employment, are required to certify that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

This alternative provides relief from damage or threats to public health and safety to people who would have no relief from such damage or threats if non-lethal methods were ineffective or impractical. Many people directly affected by wolf depredations on their domestic animals, especially pets that are killed in their yards, express concern for human safety and insist upon the removal of wolves from their property when they cause damage. Wolves that have become habituated to humans (bold) are especially unpredictable.

4.3.3.3 Maintain Effective and Selective Resource Protection Methods and Tools.

Under this alternative WS would only conduct and recommend lethal wolf damage management and not provide non-lethal technical assistance or non-lethal operational damage management to resource owners to reduce wolf damage. Therefore, WS could not respond with all the methods or possibly with the appropriate methods under this Alternative in comparison to Alternative 2. Implementation of most non-lethal damage management methods would be the responsibility of the resource owner or their agent, and therefore concerns about effectiveness and selectivity of non-lethal methods used by WS would not be relevant. Non-lethal methods used by others would not be directed by WS and thus some research developments may not be implemented as timely or in the proper manner.

Several of the methods that would be employed under the Lethal Only Alternative would be typically 100% selective for target species. These methods include aerial gunning, shooting from the ground, and euthanasia. While the methods discussed above are typically near 100% selective for taking only the target species, other methods such as

leg-hold traps and snares are somewhat less selective (Table 4-3). However, all the non-target animals captured by WS while conducting wolf damage management during 2000 to 2002 was released unharmed.

WS would also be less effective at keeping wolf predation losses as low as could be expected for Alternative 2. By restricting damage management methods to only lethal methods a full array of possible damage management would not be available. Decreased effectiveness is tied to the logistics of getting to areas with depredation problems and possibly having to use less effective damage management methods.

4.3.3.4 Potential for Some WS Methods to Take Non-target Animals.

Under this alternative, WS would only implement or recommend lethal damage management methods. However, WS would utilize pan-tension devices to exclude nontarget animals from traps and land restraint snares and shooting is species selective, hence it is not expected that adverse mortality to wildlife populations or T/E species would occur from WS actions (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003; L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001; S. Holtz, WDNR letter to D. Nelson, WS March 23, 2002). However, damage management efforts by individuals with limited training and experience would be less likely to reduce the damage or threat of damage and could have greater adverse impacts on nontarget species.

WS impacts on non-target species, including T/E species, would be similar to those described in Alternative 2, except for those species that benefit from wolf population reduction. WS personnel would minimize non-target captures through careful placement of traps or snares, utilization of trap pan-tension devices, or variation in capture methods. With regular checks of damage management equipment and through the use of wildlife immobilizing drugs, many non-target species can be successfully released if captured.

Two Federally protected T/E species that potentially could be affected by WS wolf damage management activities are the bald eagle and the Canada lynx. Wisconsin and most of the Great Lakes Region has a large, expanding population of bald eagles. Eagles are common in the wolf range especially during spring and fall migration. Canada lynx occurred historically in Wisconsin in very low numbers, but currently they are considered rare or nonexistent in the State.

Eagles scavenging on carcasses of livestock killed by wolves could accidentally be captured in traps or snares set by WS personnel around the carcasses. WS policy, however, prohibits agency personnel from setting traps closer than 30 feet to an exposed carcass. This "setback" distance reduces the likelihood of capturing any type of scavenging bird landing or walking in the immediate vicinity of the carcass. Wolf traps are also equipped with pan-tension devices and baits or lures that are less attractive to scavenging birds are utilized when trapping around livestock carcasses. Wisconsin WS personnel have not captured any eagles while conducting wolf damage management activities.

In the Final Rule (USDI 2000), the USFWS concluded that the single factor threatening the contiguous Distinct Population Segment (DPS) of lynx is the inadequacy of existing regulatory mechanisms. The Final Rule also stated that lynx were likely captured incidentally in the past during regulated and unregulated trapping for other predators, and still lynx persisted throughout much of their historic range. Therefore, it appears that the

USFWS does not believe that current trapping or wolf damage management activities adversely affect lynx in the United States DPS.

USFWS and Minnesota WS wolf damage management personnel have captured bobcats but no Canada lynx during 26 years of wolf damage management activities in Minnesota. Canada lynx occurred historically in Wisconsin in very low numbers, but currently they are considered rare or nonexistent in the State. A review of records shows that no lynx have been accidentally/incidentally captured by Wisconsin WS over the past 17 years. In addition, it is not expected that wolf damage management would have potential to affect lynx based on available lynx population data and habitat descriptions (USDI 2000) and the fact that no lynx has ever been captured by WS in Wisconsin or Minnesota. Therefore, USFWS has determined that the use of current wolf damage management methods to reduce or prevent resource damage or predation would not likely adversely affect lynx (L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001).

Should a lynx be accidentally captured by WS personnel, it could be released because WS personnel carry and are trained in the use of wildlife immobilizing drugs. In addition, if WS captured a lynx and WDNR personnel were available, a radio-collar could be attached to the lynx prior to release to track its movements and identify areas lynx use in Wisconsin and a possible resident population (A. P. Wydeven, WDNR, pers. comm. 2003).

The USFWS has concurred that the WS wolf damage management program would have no effect or not likely adversely affect Federally listed animal and bird T/E species in Wisconsin (J. Smith, USFWS letter to D. Nelson, WS, August 12, 2003; L. Lewis, USFWS letter to G. Larson, WS, May 9, 2001). The WDNR has also concurred that WS wolf damage management activities would have no effect or not likely to adversely affect State listed animal and bird T/E species (S. Holtz, WDNR letter to D. Nelson, WS March 23, 2002). WS' SOPs include measures intended to mitigate or reduce the effects on non-target species populations and WS' mitigation and SOPs that are designed to reduce the adverse effects on non-target species and to avoid jeopardizing T/E species' populations.

4.3.4 Alternative 4. Technical Assistance Only.

If Alternative 4 was selected, WS could not direct but only make recommendations on how a State agency or individuals would implement wolf damage management. Some agencies or individuals may choose not to take action to resolve wolf damage. Other situations may warrant the use of legally available management methods because of public demands, mandates, or individual preference. Damage management methods and devices could be applied by people with little or no training and experience, and with no professional oversight or monitoring for effectiveness. This in turn could require more effort and cost to achieve the same level of problem resolution, and could cause harm to the environment, including a higher take of nontarget animals.

4.3.4.1 Viability of Gray Wolf Populations in Wisconsin.

Federal down listing of wolves in Wisconsin continued to provide them protection under the ESA as a threatened species (50 CFR 17.40(o)). Operational damage management could only be conducted by government entities under the provisions of the current 4(d) rule for the Eastern DPS (50 CFR 17.40(o)). WDNR or its agents could take a limited

number of wolves annually at depredation sites. However, WDNR is not funded adequately to provide for consistent and affect operational reduction of wolf damage.

Because wolves are now a Federally protected as a "threatened" species in Wisconsin, the technical assistance that WS could provide to reduce wolf damage would be limited to preventive measures or best management practices. WS could not, under current Federal regulations, instruct property owners in how to lethally control wolves. Thus, WS technical assistance would have no effect on the wolf population. If wolf damage occurred, property owners could request lethal control actions from authorized agencies other than WS. Some property owners may take illegal actions against local wolf populations out of frustration if preventive or best management practices measures fail resulting in impacts (Schueler 1993) similar to Alternative 5.

Wolf populations would continue to increase over time where population control or operational damage management pressure was low. After Federal delisting, resource owners may be able to obtain permits from the WDNR to allow them to reduce damage caused by depredating wolves outside of a regulated sport harvest season, and these resource owners could receive technical assistance from WS regarding these options. Lack of a consistent and effective operational control program may reduce the tolerance of wolves by the public and result in increased levels of illegal kill, negatively impacting the wolf population.

4.3.4.2 Public Health and Safety from Wolf Damage Management.

Under this alternative, WS would only provide technical assistance to those requesting wolf damage management assistance from WS in Wisconsin and have no direct impact on public and pet safety from the use of damage management methods. This alternative could result in increased risks to public health and safety when compared to Alternatives 1, 2 or 3. Impacts from non-WS personnel would be variable based upon the knowledge and skill of the person implementing wolf damage management methods. Lacking professional assistance, some resource owners might resort to using illegal pesticides (Schueler 1993, Allen et al. 1996, USDA 1997) to reduce damage or the threat of damage from wolves. Pesticides are a cheaper form of predator control that represents one of the greatest threats to the environment, T/E species, and domestic pets. There may be increased risks to public and pet safety from improper or unscrupulous use of pesticides. If wolf populations continue to increase without a damage management program in place, there are potential threats to public and pet health and safety from wolves that enter people's yards or attack their pets.

4.3.4.3 Maintain Effective and Selective Resource Protection Methods and Tools.

Under this alternative WS would not conduct any operational wolf damage management and only provide technical assistance and recommendations to resource owners to reduce wolf damage. Implementation of damage management methods would be the responsibility of the resource owner or their agent, and therefore concerns about effectiveness and selectivity of methods used by WS are not relevant. Some type of wolf damage management would most likely be implemented by resource owners or State or Federal agencies, and possibly by private or sport trappers or hunters after Federal and State delisting. However, the methods used under other programs would not be directed by WS and thus could be less selective than WS' methods. Damage management efforts by individuals with limited training and experience would be less likely to take offending

individual wolves and more likely to take nontarget species.

4.3.4.4 Potential for Some WS Methods to Take Non-target Animals.

No operational WS activities would be conducted pursuant to this alternative and therefore, no risks to non-target or T/E species from WS operational program actions. In the absence of WS operational damage management, some type of damage management would most likely be implemented by agricultural producers, other private individuals, or by other authorized State or Federal agencies. Damage management actions and the methods used by these individuals or agents could affect non-target species populations or T/E species if these individuals or agents are inexperienced with the methods and techniques that are used to reduce wolf damage. Some individuals frustrated with wolf management policies might attempt to illegally shoot, trap, snare, or poison wolves with potential detrimental effects on nontarget species or T/E species. Lacking professional assistance, some individuals might use illegal pesticides (Schueler 1993, Allen et al. 1996, USDA 1997), a cheaper form of predation control that represents one of the greatest threats to the environment, T/E species, domestic animals, and public safety.

An uncontrolled, expanding wolf population could also negatively impact other wildlife species, especially wolf prey species. Wolves are an important predator on ungulate populations and may suppress or limit the populations of prey species under certain conditions (e.g., under severe weather conditions, ungulate disease outbreaks, etc).

4.3.5 Alternative 5 No WS Wolf Damage Management in Wisconsin.

A thorough review of the potential impacts of this alternative can be found in USDA (1997). USDA (1997) summarized the biological impacts of the No WS Program Alternative as follows:

"Taking of some species would be more variable (i.e., lower for some species in some areas and higher in other areas). However, taking of non-target species probably would be higher, and for some small populations, could become biologically significant. This would be especially important if the species was threatened or endangered. Species diversity could be significantly affected. The indirect impacts on non-target species affected through the food chain or by uncontrolled releases of toxicants into the environment also could increase. In some areas, people could use unapproved chemical methods. Misuse of chemicals could increase and thereby adversely affect certain wildlife populations and public health and safety."

4.3.5.1 Viability of Gray Wolf Populations in Wisconsin.

Alternative 5 would result in no Wisconsin WS wolf damage management program; therefore WS would have no impact on gray wolf populations in Wisconsin. Some type of wolf damage management would most likely be conducted by resource owners, various State or local governmental agencies, or other entities. Wolf damage management would certainly be handled differently in certain areas without WS' assistance. In the absence of population controls or a damage reduction program, Wisconsin's wolf population would continue to grow and expand its range in the State. Increased wolf numbers and expansion into more agricultural and urban areas of the State would result in increased instances of wolf depredation on domestic animals or threats to people, exaggerate and negative publicity about the damage being caused by wolves would create a strong potential for illegal killing of wolves by disgruntled members of the general public. Because the wolf is a State and Federally protected species, with a

"threatened" status in Wisconsin, the public is prohibited from "taking" problem wolves and severe ESA penalties are in place until the WDNR and USFWS delist wolves (50 cfr 17.40(o)). Livestock producers are dependent upon authorized State or Federal personnel to resolve wolf-livestock conflicts.

At the present time, WS is the only authorized Federal agency that is actively conducting wolf damage management in Wisconsin. USFWS or WDNR personnel are also authorized by Federal wolf management regulations to conduct wolf damage management activities but have elected not to do so. Individuals frustrated with a wolf management policy that does not provide for damage management of problem wolves may resort to illegal killing of wolves. Since this alternative may result in a reduction of services provided to resolve wolf depredation conflicts it may result in a reduction of tolerance of wolves by the public and result in increased illegal kill (A. P. Wydeven, WDNR, pers. comm. 2003). Such illegal kill could be widespread and would be much less selective than focused lethal damage management conducted by WS (A. Wydeven, WDNR, pers. comm. 2003). Impacts on wolf populations would be variable dependent upon actions taken by other governmental agencies and affected individuals.

4.3.5.2 Public Health and Safety from Wolf Damage Management.

This alternative would result in no WS wolf damage management program in Wisconsin, and therefore, WS would have no impact on public and pet safety from the use of damage management methods. This alternative could result in increased risks to public health and safety when compared to the other Alternatives. Impacts from non-WS personnel would be variable based upon the knowledge and skill of the person implementing wolf control methods. If wolf populations continue to increase without a damage management program in place, there are potential threats to public and pet health and safety from wolves that enter people's yards or attack their pets. Lacking professional assistance, some resource owners might resort to using illegal shooting, trapping, snaring or poisons (Schueler 1993, Allen et al. 1996, USDA 1997) to reduce damage or the threat of damage from wolves. Poisons are a cheaper form of predator control that represents increased risks to the environment, to public and pet safety, and T/E species from improper or unscrupulous use of these methods.

4.3.5.3 Maintain Effective and Selective Resource Protection Methods and Tools.

Under this alternative WS would not conduct any wolf damage management and therefore concerns about effectiveness and selectivity of methods used by WS are not relevant. Some type of wolf damage management would most likely be implemented by resource owners or State or Federal agencies and possible by private or sport trappers or hunters in the future. However, the methods used under other programs would not be directed by WS and thus could be less selective than WS' methods. Damage management efforts by individuals with limited training and experience would be less likely to take offending individual wolves and more likely to take nontarget species.

4.3.5.4 Potential for Some WS Methods to Take Non-target Animals.

No WS activities would be conducted pursuant to this alternative and therefore, there would be no risks to non-target or T/E species from WS program actions. Some type of damage management would most likely be implemented by agricultural producers or other private individuals. However, any such actions initiated by individuals with limited

training and experience would be more likely to affect non-target species. Lacking professional assistance and out of frustration, some individuals might use shooting, snaring, trapping or poisons (Schueler 1993, Allen et al. 1996, USDA 1997), a cheaper form of predation control that represents one of the greatest threats to the environment, T/E species, domestic animals, and public safety.

An uncontrolled, expanding wolf population could also negatively impact other wildlife species, especially wolf prey species. Wolves are an important predator on ungulate populations and may suppress or limit the populations of prey species under certain conditions (e.g., under severe weather conditions, ungulate disease outbreaks, etc).

4.4 Summary of Wisconsin WS' Impacts

Table 4-4 highlights the potential impacts of each alternative to the issues that were analyzed in detail. No single or cumulative adverse environmental consequences are expected to result from the proposed action. Since the methods used by WS would be selective for wolves, impacts on nontarget species would be extremely low. None of the Federally protected T/E species or sensitive species listed by the USFWS or WDNR in Wisconsin would be jeopardized by the proposed action (Holtz 2002, USDI 2003). Economic and social impacts would primarily be beneficial, although some segments of the human population might be opposed to the killing of wolves. Negative impacts to the physical environment would be non-existent.

Table 4-4. Relative Comparison of Anticipated Impacts from Alternatives

| <i>Issues/Impacts</i> | <i>Alt. 1 Non lethal Program</i> | <i>Alt. 2 Proposed Action</i> | <i>Alt. 3 Lethal Only Program</i> | <i>Alt. 4 Tech. Asst. Only</i> | <i>Alt. 5 No Program</i> |
|---|--|---|--|--|--|
| <i>Impact on wolf viability</i> | low | low | low | unknown, but probably low | unknown, but probably low |
| <i>Risks to public and pets</i> | low risks | lowest risks | low risks | slightly higher risk than Alt. 1 or 2 | unknown risks but possibly moderate |
| <i>Effectiveness and selectivity of methods</i> | good effectiveness and selectivity, but lower than Alt. 2 | greatest effectiveness and selectivity | good effectiveness and selectivity, but lower than Alt. 2 | lower effectiveness and selectivity than Alt. 1, 2 or 3 | lower effectiveness and selectivity than Alt. 1, 2 or 3 |
| <i>Impacts to T&E species</i> | low risks | lowest risks | low risks | slightly higher risk than Alt. 1 | unknown risks but possibly moderate |

Based on the diversity and distribution of the affected environment, the above analyses failed to identify any cumulative impacts or are any impacts expected due to the proposed action. Any localized reduction of wolf populations would likely soon be replaced and habitats reoccupied as WS personnel could only conduct IWDM on site specific areas with Agreements for Control, or Cooperative Agreements. In addition, wolves continue to be listed as threatened by the USFWS and are protected under the provisions of the ESA (50 CFR 17.40(o)). This proposed alternative would be conducted in strict compliance with the 4(d) rule regulations of the final reclassification rule (50 CFR 17.40(o)), as well as the WWMP (1999) and associated policies and agreements between WDNR, WS, and USFWS. The negative effects to wolf populations would be low and would not have any long-term adverse impact on wolves. The proposed alternative would provide positive effects to the wolf population by promoting public acceptance of wolves in Wisconsin (A. P. Wydeven, WDNR, pers. comm. 2003).

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CHAPTER 5: LIST OF PREPARERS AND PERSONS CONSULTED

5.1 Preparers and Reviewers

Ron Anwash, Ho Chunk Nation, Black River Falls, WI
Scott Beckerman, USDA-APHIS-WS, Waupun, WI
Peter David, GLIFWC, Odanah, WI
Dan Eklund, USFS, Park Falls, WI
Carl Edwards, Lac du Flambeau Band of Lake Superior Chippewa, Lac du Flambeau, WI
Pam Engstrom, USDA-APHIS-WS, Rhinelander, WI
David Hayes, USDA-APHIS-WS, Billings, MT
Randy Jurewicz, WDNR, Madison, WI
David Nelson, USDA-APHIS-WS, Sun Prairie, WI
Peter Nauth, WDATCP, Madison, WI
Tony Nevalainen, USDA-APHIS-WS, Sun Prairie, WI
John Olson, WDNR, Park Falls
Todd Peterson, WDNR, Madison, WI
Pete Poulos, USDA-APHIS-WS, Riverdale, MD
David Ruid, USDA-APHIS-WS, Rhinelander, WI
Ron Spry, USFWS, Green Bay, WI
Kelly Thiel, USDA-APHIS-WS, Rhinelander, WI
Bill Wengeler, WCFA, Merrill, WI
Robert Willging, USDA-APHIS-WS, Rhinelander, WI
Bryan Woodbury, WDNR, Madison, WI
Adrian Wydeven, WDNR, Park Falls, WI

5.2 Persons consulted

Rick Dexter, Wisconsin State Historical Preservation Office, Madison, WI
Joe Fontaine, USFWS, Helena, MT
Jonathan Gilbert, GLIFWC, Odanah, WI
Signe Holtz, WDNR, Madison, WI
Garrett Huffman, WDATCP, Madison, WI
Bill Mytton, Rocky Mountain Elk Foundation (former WDNR employee), Absorkee, MT
Ron Refsnider, USFWS, Minneapolis, MN
James A. Schlender, GLIFWC, Odanah, WI
Janet Smith, USFWS, Green Bay, WI
Norm Weiland, USFS, Milwaukee, WI
James Zorn, GLIFWC, Odanah, WI

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APPENDIX A

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APPENDIX B

AUTHORITY OF AGENCIES TO CONDUCT WILDLIFE DAMAGE MANAGEMENT IN WISCONSIN

USDA-APHIS-Wildlife Services

The USDA is directed by law to protect American agriculture and other resources from damage associated with wildlife. The primary statutory authority for the WS program is the Act of March 2, 1931, as amended (7 U.S. C. 426-426c; 46 Stat. 1468), which provides that:

“The Secretary of Agriculture is authorized and directed to conduct such investigations, experiments, and tests as he may deem necessary in order to determine, demonstrate, and promulgate the best methods of eradication, suppression, or bringing under control on national forests and other areas of the public domain as well as on State, Territory or privately owned lands of mountain lions, wolves, coyotes, bobcats, prairie dogs, gophers, ground squirrels, jackrabbits, brown tree snakes and other animals injurious to agriculture, horticulture, forestry, animal husbandry, wild game animals, furbearing animals, and birds, and for the protection of stock and other domestic animals through the suppression of rabies and tularemia in predatory or other wild animals; and to conduct campaigns for the destruction or control of such animals. Provided that in carrying out the provisions of this Section, the Secretary of Agriculture may cooperate with States, individuals, and public and private agencies, organizations, and institutions.”

Since 1931, with the changes in societal values, WS policies and its programs place greater emphasis on the part of the Act discussing “bringing (damage) under control”, rather than “eradication” and “suppression” of wildlife populations. In 1988, Congress strengthened the legislative mandate of WS with the Rural Development, Agriculture, and Related Agencies Appropriations Act. This Act states, in part:

“That hereafter, the Secretary of Agriculture is authorized, except for urban rodent control, to conduct activities and to enter into agreements with States, local jurisdictions, individuals, and public and private agencies, organizations, and institutions in the control of nuisance mammals and birds and those mammals and birds species that are reservoirs for zoonotic diseases, and to deposit any money collected under any such agreement into the appropriation accounts that incur the costs to be available immediately and to remain available until expended for Animal Damage Control activities.”

Further, in 2001, Congress amended WS authority in the Agriculture Appropriations Bill, which provides that:

“The Secretary of Agriculture may conduct a program of wildlife services with respect to injurious animal species and take any action the Secretary considers necessary in conducting the program. The Secretary shall administer the program in a manner consistent with all of the wildlife services authorities in effect on the day before the date of the enactment of the Agriculture, Rural Development, Food and Drug Administration, and Related Agencies Appropriations Act, 2001.”

To fulfill this Congressional direction, WS conducts activities to prevent or reduce wildlife damage to agricultural, industrial and natural resources, property, and threats to public health and safety on private and public lands in cooperation with other federal, state and local agencies, private organizations, and

individuals. Therefore, wildlife damage management is not based on punishing animals but as one means of reducing damage, with actions being implemented using the WS Decision Model (Slate et al. 1992). The imminent threat of damage or loss of resources is often sufficient for individual actions to be initiated. The need for action is derived from the specific threats to resources or the public. WS' vision is to improve the coexistence of people and wildlife by providing federal leadership to reduce problems.

Wisconsin Department of Natural Resources Legislative Authority

The WDNR, under the direction of a Governor appointed Natural Resources Board, is specifically charged by the Legislature with the management of the State's wildlife resources. Although legal authorities of the Natural Resources Board and the WDNR are expressed throughout Wisconsin Administrative Code (WAC), the primary statutory authorities include establishment of a system to protect, develop and use the forest, fish and game, lakes, streams, plant life, flowers, and other outdoor resources of the state (s. 23.09 Wis. Stats.) and law enforcement authorities (s. 29.001 and s. 29.921 Wis. Stats.). The Natural Resources Board adopted mission statements to help clarify and interpret the role of WDNR in managing natural resources in Wisconsin. They are:

- To protect and enhance our natural resources: our air, land and water; our wildlife, fish and forests and the ecosystems that sustain all life²¹.
- To provide a healthy sustainable environment and a full range of outdoor opportunities.
- To ensure the right of all people to use and enjoy these resources in their work and leisure.
- To work with people to understand each other's views and carry out the public will. And in this partnership consider the future and generations to follow.

Removal of Wild Animals and Authorization to Remove Wild Animals Causing Damage or Nuisance

Wisconsin regulations (Wis. Stat. 29.885) grants WDNR the authority to authorize the removal of wild animals causing damage or a nuisance. WDNR Code (WAC, Natural Resources (NR) 12.10) is established to administer Wisconsin regulations relating to the removal of wild animals causing damage or nuisance. This administrative rule defines criteria whereby landowner, lessees, or occupants may remove from lands under their control wild animals constituting a nuisance. WS assistance to those requesting assistance in reducing wolf damage, which could involve the removal of wolves, would be conducted under authority granted to WS, or landowners, lessees, or occupants, by the WDNR and USFWS.

Wisconsin Department of Agriculture, Trade, and Consumer Protection

The WDATCP, under the direction of a Governor appointed nine member Board of private citizens and Secretary of the WDATCP, is specifically charged by the Legislature with providing consumer and business information, handling complaints, providing agricultural development and marketing services, assisting agricultural production and much more. The mission of WDATCP is to serve the citizens of Wisconsin by assuring:

- The safety and quality of food
- Fair business practices for the buyer and seller
- Efficient use of agricultural resource in a quality environment

²¹ Primary control for wolf damage management in Wisconsin resides with the WDNR (WWMP 1999, USFWS 1992, 50 CFR 17.40(o)) calling into question the value of WS' process in planning and decision-making. Still, an educated and involved citizenry can help inform planners and decision-makers at all levels of government. In this circumstance, the best way in which to involve and educate citizens consistent with the State's timeframe of need is through the public NEPA process.

- Consumer protection
- Healthy animals and plants
- The vitality of Wisconsin agriculture and commerce

WDATCP administers many laws. Most of them are found in chapters 88 to 100, 126 and 136 of the Wisconsin Statutes. WDATCP has adopted rules to implement these laws. WDATCP rules are found in the WAC, Chapters ATPC 1 to ATPC 162. DATCP rules have the full force and effect of law.

USDA Forest Service

The Forest Service has the responsibility to manage the resources of federal lands for multiple uses including livestock grazing, timber production, recreation and wildlife habitat, while recognizing the state's authority to manage wildlife populations. The Forest Service recognizes the importance of reducing wildlife damage on lands and resources under their jurisdiction, as integrated with their multiple use responsibilities. For these reasons, the Forest Service has entered into a national MOU with WS to facilitate a cooperative relationship. Copies of the MOU are available by contacting the WS State Director's Office at 750 Windsor Street, Room 101, Sun Prairie, Wisconsin 53590.

U.S. Fish and Wildlife Service

The USFWS is charged with implementation and enforcement of the ESA. The USFWS cooperates with the WDNR and WS by recommending measures to avoid or minimize take of T/E species. The term "take" is defined by the ESA (section 3(19)) to mean *"to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct."* The terms "harass" and "harm" have been further defined by USFWS regulations (50 CFR section 17.3), as follows: 1) *harass means an intentional or negligent act or omission which creates the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering;* 2) *harm means an act which actually kills or injures wildlife. Such acts may include significant habitat modification or degradation when it actually kills or injures wildlife by significantly impairing essential behavioral patterns including breeding, feeding or sheltering.*

Compliance with Federal Laws

WS consults and cooperates with other federal and state agencies as appropriate to ensure that all WS activities are carried out in compliance with all applicable federal laws.

National Environmental Policy Act: All federal actions are subject to NEPA (Public Law 91-190, 42 U.S.C. 4321 et seq.). WS follows the CEQ regulations implementing NEPA (40 CFR 1500 et seq.), USDA (7 CFR 1b), and the APHIS Implementing Guidelines (7 CFR 372) as a part of the decision-making process. These laws, regulations, and guidelines generally outline five broad types of activities to be accomplished as part of any project: public involvement, analysis, documentation, implementation, and monitoring. NEPA also sets forth the requirement that all major federal actions be evaluated in terms of their potential to significantly affect the quality of the human environment for the purpose of avoiding or, where possible, mitigating and minimizing adverse impacts. Federal activities affecting the physical and biological environment are regulated in part by CEQ through regulations in (40 CFR, Parts 1500-1508). In accordance with CEQ and USDA regulations, APHIS Guidelines Concerning Implementation of NEPA Procedures, as published in the Federal Register (44 CFR 50381-50384) provide guidance to APHIS regarding the NEPA process.

Pursuant to NEPA and CEQ regulations, this EA documents the analysis of a proposed federal action's impact, informs decision-makers and the public of reasonable alternatives capable of avoiding or

minimizing adverse impacts, and serves as a decision-aiding mechanism to ensure that the policies and goals of NEPA are infused into federal agency actions. This EA was prepared by integrating as many of the natural and social sciences as warranted based on the potential effects of the proposed action. The direct, indirect, and cumulative impacts of the proposed action are analyzed.

Endangered Species Act (ESA): Under the ESA, all federal agencies are charged with a responsibility to conserve endangered and threatened species and to utilize their authorities in furtherance of the purposes of the ESA (Sec.2(c)). WS conducts Section 7 consultations with the USFWS to utilize the expertise of the USFWS to ensure that, "*Any action authorized, funded or carried out by such an agency . . . is not likely to jeopardize the continued existence of any endangered or threatened species . . .*" (Sec.7 (a) (2)). WS conducts formal Section 7 Consultations with the USFWS at the national level and consultations with the USFWS at the local level as appropriate.

National Historical Preservation Act (NHPA) of 1966 as amended: The NHPA requires federal agencies to: 1) evaluate the effects of any federal undertaking on cultural resources, 2) consult with the State Historical Society regarding the value and management of specific cultural, archaeological and historic resources, and 3) consult with appropriate American Indian Tribes to determine whether they have concerns for traditional cultural resources in areas of these federal undertakings. In conjunction with preparation of this EA, WS consulted with the Wisconsin State Historical Society and received that office's concurrence that WS' proposed activities would be unlikely to have any adverse effects on cultural, archeological, or historic resources (R. Dexter, WI-SHPO, pers. comm. 2002). WS also sought input from the Red Cliff, Lac Courte Oreilles, Bad River, Lac du Flambeau, St. Croix, and Sokaogon Chippewa Bands, Ho Chunk Nation, Menominee, Oneida, Forest County Potawatomi, and Stockbridge-Munsee Band of Mohican Indians and the Great Lakes Indian Fish and Wildlife Commission. None of these entities identified or provided any cultural or other concerns relating to WS current or proposed program. In most cases, wolf damage management has little potential to cause adverse effects to sensitive cultural resources. The areas where wolf damage management would be conducted are small (see section 1.4); pose minimal ground disturbance, nor adverse wildlife population impacts. In addition, any WS activities conducted on tribal lands would only be conducted at the request of the Tribe and after appropriate authorizing documents were signed.

Executive Order 12898 - Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations: Environmental Justice (EJ) is a movement promoting the fair treatment of people of all races, income and culture with respect to the development, implementation and enforcement of environmental laws, regulations and policies. Fair treatment implies that no person or group of people should endure a disproportionate share of the negative environmental impacts resulting either directly or indirectly from the activities conducted to execute this country's domestic and foreign policies or programs. EJ has been defined as the pursuit of equal justice and equal protection under the law for all environmental statutes and regulations without discrimination based on race, ethnicity, or socioeconomic status.

All WS activities are evaluated for their impact on the human environment and compliance with Executive Order 12898 to ensure EJ. WS personnel use wildlife damage management methods as selectively and environmentally conscientiously as possible. All chemicals used by WS are regulated by the EPA through Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), by the WDATCP, and by WS Directives. Based on a thorough Risk Assessment, APHIS concluded that when WS program chemicals are used following label directions, they are selective to target individuals or populations and such use has negligible impacts on the environment (USDA 1997, Appendix P). The WS operational program, analyzed in this document, properly disposes of any excess solid or hazardous waste. It is not anticipated that the proposed action would result in any adverse or disproportionate environmental impacts to minority or low-income persons or populations.

Executive Order 13045 - Protection of Children from Environmental Health and Safety Risks: Children may suffer disproportionately from environmental health and safety risks, including their developmental physical and mental status, for many reasons. Because WS makes it a high priority to identify and assess environmental health and safety risks, WS has considered the impacts that alternatives analyzed in this EA might have on children. All WS wolf damage management is conducted using only legally available and approved damage management methods where it is highly unlikely that children would be adversely affected.

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APPENDIX C

Methods Employed By Wisconsin WS for Wolf Damage Management

TECHNICAL ASSISTANCE (NON-LETHAL) METHODS

Technical assistance includes providing advice, recommendations, and information regarding wildlife damage management methods and techniques to individuals and groups. Technical assistance also involves providing presentations or demonstrations on management techniques. Technical assistance for wolf depredation management in Wisconsin will involve non-lethal methods that can be implemented by individuals experiencing wolf depredation problems.

Non-lethal methods²² have been described as consisting of two stimuli: disruptive stimuli and aversive stimuli (Shivak 2001). Disruptive stimuli are novel or otherwise undesirable stimuli that prevent or alter behavior of animal. Disruptive stimulus devices will usually be limited to the protection of small areas. Aversive stimuli interfere with behaviors by capitalizing on animal's innate dislike of novel, disagreeable stimuli and the more noxious the stimuli, the more aversive the stimuli are likely to be. With disruptive stimuli, learning decreases effectiveness, but with aversive techniques, effectiveness is dependent on learning. Aversive stimuli are noxious stimuli that are paired with a specific behavior to condition an animal not to perform that behavior.

Producer-Implemented Non-lethal Methods. These consist primarily of non-lethal preventive methods such as cultural practices and habitat modification. Cultural practices and other management techniques are implemented by the livestock producer and property owners. Livestock producers and property owners may be encouraged to use these methods, based on the level of risk, need, and professional judgment on their effectiveness and practicality. These methods include:

- **Animal husbandry practices** involve the basic management practices used by farmers and ranchers in the care and production of livestock. The modification or use of certain animal husbandry practices has been reported to have some effectiveness in reducing depredations by coyotes (Robel et al. 1981, Linhart 1984). These practices may include use of shed lambing, clearing of woody or brushy pastures, modifications to lambing or calving schedules, and proper dead animal disposal procedures. Fritts (1982) reported that many instances of wolf depredation on livestock in Minnesota were related to animal husbandry practices, such as the pasturing of cattle in extensive woodlots and allowing calving in woodlots or remote pastures. Fritts also wrote that improper carcass disposal may encourage or perpetuate depredations. Animal husbandry practices include, but are not limited to, the use of:
- **Guarding animals** include the use of dogs, donkeys, and llamas. These animals can effectively reduce coyote predation losses in some situations (Meadows and Knowlton 2000, Cavalcanti and Knowlton 1998, Green and Woodruff 1996). Several breeds of large dogs have been used for centuries by rural societies in the Old World to guard livestock from predators (Linhart 1984). Studies conducted in the U.S. have shown the use of Old World guarding dog breeds, such as Great Pyrenees, Kangal, and Komondor, to be effective in the protection of livestock from coyote predation (Linhart et al. 1969, Coppinger et al. 1988, Andelt 1992). In most situations guarding dogs provide protection from coyote depredations by "warning" or chasing the coyote away (McGrew and Blahesley 1984). The effectiveness of guarding dogs for protection from wolves in

²² Chemical repellents, projectile repellents, visual and acoustic devices generally show little promise in reducing livestock depredation on a large-scale or long-term basis (Smith et al. 2000a).

the U.S. has been questioned (Coppinger and Coppinger 1995), and may be complicated by the nature of farming and ranching practices in wolf habitat (i.e. large, remote, woody or brushy pastures) (Fritts et al. 1992).

Success in using guard dogs is highly dependent on proper breeding and bonding with the type of livestock the dog is to protect. Effective use of guard dogs depends on training, obedience, care, and feeding (Green and Woodruff 1996). The efficacy of guard dogs is affected by the amount of predation loss, size and topography of the pasture, acceptance of the dog by the livestock, training, compatibility with humans, compatibility with other predator damage management methods, and the species of predator. Guard dogs breeds mature at about 2 years of age and may begin protecting livestock at this age. Guard dogs have effectively working life of less than 3 years because of accidents, disease, and people misidentifying the guard dog as a threat to the livestock and they shoot the dog (Lorenz et al. 1986, Green 1989). Guard dogs may kill, injure, harass, or try to breed sheep and goats (Green 1983).

Wolves avoided livestock guarding dogs initially, but over a period of a few weeks came closer and closer until near contact was made (Smith et al. 2000b). The wolves eventually showed dominance over the dogs in direct confrontations. In addition, wolves have killed guarding dogs, including Anatolian Shepherds in Minnesota and Montana (Fritts and Paul 1989). Bangs et al. (1998) also identified guard dog mortalities attributed to wolves during the last five years of wolf recovery in the Rocky Mountains.

Guard donkeys have been used to protect livestock with mixed results. The reported most effective guard donkey is a jenny with a foal. Guard donkeys are probably more effective at deterring dog predation than predation.

Guard llamas have also been used with mixed success to protect livestock. Some producers believe guard llamas are better at defending livestock from dogs than coyotes. Llamas are typically aggressive toward dogs and appear to readily bond with sheep (Cavalcanti and Knowlton 1998). Llamas are able to reduce coyote predation on sheep initially (Meadows and Knowlton 2000). Dogs and coyotes adapt to the protective nature of llamas but over time reducing their effectiveness (Meadows and Knowlton 2000). Further, in Montana during the last five fiscal years, wolves killed 12 llamas (Montana MIS unpubl. data FY98, FY99, FY00, FY01, FY02 (annual reports)).

- **Carcass removal** is burying, liming or incinerating dead livestock to remove an attractant for predators. However, Mech (1999) could find no clear relationship between the application of carcass removal and a reduction in wolf predation on livestock in Minnesota, but left open the possibility that larger farms tend to attract wolves by providing a more reliable food source in the form of carcasses.
- **Pasture selection** is placing or moving cattle in pastures believed less likely to expose livestock to predation. Usually, moving livestock to pastures near human habitation is believed to expose livestock to fewer predators. Livestock producers eventually must move livestock to distant pastures to graze, however, they may wait until calves are larger and older in the hope to reduce their vulnerability to predation.
- **Habitat modification** is used whenever practical to attract or repel certain wildlife species or to separate livestock from predators. For example, WS may recommend clearing brush from calving pastures or near residences to reduce available cover for predators.

- **Physical exclusion** or fencing to protect livestock from wolf depredations is one of the earliest methods used to deal with wolf problems, and was used in early Europe as well as by American colonists (Wade 1978, Cluff and Murray 1995). Woven wire fencing with buried wire aprons were used in Texas sheep pastures to exclude coyotes but cost of materials and labor were generally prohibitive (Linhart 1984). Electric fencing has shown some success in reducing coyote depredation on sheep (Gates et al. 1978, Linhart 1984), but tests on wolves have not been reported (Cluff and Murray 1995). Widespread use of fencing as a nonlethal control technique for wolves has not occurred (Cluff and Murray 1995). Predator proof fencing may be effective in small, confined situations, or justified when protecting extremely high value animals.
- **Animal behavior modification** refers to tactics that deter or repel predators and thus, reduce predation. Unfortunately, many of these techniques are only effective for a short time before wildlife habituate to them (Pfeifer and Goos 1982, Conover 1982, Shivak 2001). Devices used to modify behavior include:

Harassment/Frightening Devices are methods that usually involve a light, sound, or motion device designed to deter wolves from a certain area. Strobe and flashing lights, propane exploders, sirens, and various combinations of these devices have all been used in attempts to reduce livestock losses to coyote, with wide ranging degrees of effectiveness (Linhart 1984, Andelt 1987). Coyotes readily adapt to most repellent devices (Wade 1978), and the response of wolves is probably similar (Cluff and Murray 1995). Blinking highway safety lights and flagging were used to reduce wolf predation at cattle farms in Minnesota but the effectiveness of these methods could not be adequately measured (Fritts 1982). Electronic guards (siren strobe-light devices) are battery powered units operated by a photocell. The unit emits a flashing strobe light and siren call at regular intervals throughout the night. Efficacy of strobe-sirens is highly variable and less than three weeks (Linhart 1992). The device is a short-term tool used to deter predation until livestock can be moved to another pasture, brought to market, or other predator damage management methods implemented. Lights and flagging may be most useful in wolf depredation situations where other control methods such as trapping are prohibited or impractical (Fritts et al. 1992).

Fladry consists of waving flags hanging about every 20 inches from thin rope of cable stretched about 20 inches above the ground. Fladry may be used in addition to or in substitution of fences, as a new means to protect domestic animals from depredation by wolves. Fladry seems to work because it may be "novel" to wolves (Musiani and Visalberghi 2001), however, the length of time it may work is undetermined and variable (Shivak 2001).

Wisconsin WS personnel maintain and distribute information on livestock guarding dogs and other nonlethal techniques, including a pamphlet, "Wolves in Farm Country in Wisconsin." Wisconsin WS also maintains an inventory of electronic guards and flashing lights to loan to producers in wolf damage situations where these devices may be useful.

WS IMPLEMENTED OPERATIONAL CONTROL METHODS

Operational methods consist primarily of tools or devices used to capture or kill a particular animal or local population of wildlife to alleviate resource damage. Some operational methods may be used as

lethal or nonlethal methods (e.g., leg-hold traps, snares). If WS personnel apply operational methods on private lands, an *Agreement for Control on Private Property* must be signed by the landowner or administrator authorizing the use of each damage management method. Operational methods used by WS include:

WS Implemented Non-Lethal Control Methods

- **Leg-hold traps** can be utilized to live-capture a variety of mammals, and are effectively used within Wisconsin to capture wolves. Three advantages of the leg-hold trap are: 1) they can be set under a wide variety of conditions, and 2) pan-tension devices can be used to reduce the probability of capturing smaller non-target animals (Turkowski et al. 1984, Phillips and Gruver 1996), and 3) non-target wildlife can be released. Effective trap placement and the use of appropriate lures by trained WS personnel also contribute to the leg-hold trap's selectivity.

Leg-hold traps are difficult to keep operational during inclement weather and they lack selectivity where non-target species are of a similar or heavier weight than the target species. The use of leg-hold traps also requires more time and labor than some methods, but they are indispensable in resolving many depredation problems. Leg-hold traps are constantly being modified and tested to improve the welfare of captured animals.

- **Snares** may be used as either lethal or live-capture devices. Snares set to catch an animal by the neck are usually lethal, unless they are used as land restraint snares which can be used as live capture devices. Careful attention to details when placing snares and the use of a "stop" on the cable can also allow for live-capture of neck-snared animals. Spring-activated foot snares could be used to capture depredating wolves.
- **Chemical Immobilization** and handling of live-captured wolves could be conducted by using several drugs approved and authorized for this purpose. Selected Wisconsin WS personnel have received training in the safe use of authorized immobilization/euthanasia chemicals and are certified by WS. This training involves hands-on application of state-of-the-art techniques and chemicals. Immobilization drugs approved for use by WS include:

Ketamine hydrochloride is a cyclohexamine (dissociative) type drug that produces immobilization and analgesia by selective depression of the central nervous system. Ketamine produces a state of unconsciousness that interrupts association pathways to the brain and allows for the maintenance of the protective reflexes, such as coughing, breathing, swallowing, and eye blinking. It is supplied as a slightly acidic solution (pH 3.5 to 5.5) for intramuscular injection. Ketamine is detoxified by the liver and excreted by the kidney. Following administration of recommended doses, animals become immobilized in about 5 minutes with anesthesia lasting from 30 to 45 minutes. Depending on dosage, recovery may be as quick as 4 to 5 hours or may take as long as 24 hours. Recovery is generally smooth and uneventful. Ketamine is rarely used in a pure state due to possible negative side effects. For wolf immobilizations Ketamine would be used in combination with Xylazine in order to minimize side effects.

Xylazine hydrochloride is a sedative which produces central nervous system depression and moderate analgesia and muscle relaxant properties. Xylazine HCL is most often used in combination with drugs such as Ketamine. Ketamine/Xylazine combinations can be used to effectively and safely immobilize a variety of mammals. At high dose rates the margin of safety decreases greatly. Recommended dosages are administered through

intramuscular injection allowing the animal to become immobilized in about 5 minutes and lasting from 30 to 45 minutes.

Yohimbine is a useful and readily available antagonist used to reverse the effects of Xylazine.

Telazol is a combination of equal parts of tiletamine hydrochloride and zolazepam hydrochloride. The product is generally supplied sterile in vials, each containing 500 mg of active drug, and when dissolved in sterile water has a pH of 2.2 to 2.8. Telazol produces a state of unconsciousness in which protective reflexes, such as coughing and swallowing, are maintained during anesthesia. Schobert (1987) listed the dosage rates for many wild and exotic animals. Before using Telazol, the size, age, temperament, and health of the animal are considered. Following a deep intramuscular injection of Telazol, onset of anesthetic effect usually occurs within 5 to 12 minutes. Muscle relaxation is optimum for about the first 20 to 25 minutes after the administration, and then diminishes. Recovery varies with the age and physical condition of the animal and the dose of Telazol administered, but usually requires several hours.

Capture-All 5 is a combination of **Ketaset** and **Xylazine**, and is regulated by the FDA as an investigational new animal drug. The drug is available, through licensed veterinarians, to individuals sufficiently trained in the use of immobilization agents.

Capture-All 5 is administered by intramuscular injection; it requires no mixing, and has a relatively long shelf life without refrigeration, all of which make it ideal for the sedation of various species.

- **Relocation** is the practice of capturing a wolf or wolves and moving them to another location for release. Depredating wolves may be relocated from Zones 1, 2, and 3. Relocation may be effective in some situations, but success will vary depending on the trapping history of a problem wolf. Eventually relocation may be limited as the number of suitable release sites are occupied by wolves and lethal removal should be considered (Linnel et al. 1997). Identification of release sites and agreements with appropriate land owners/managers must be done before relocation efforts can be initiated (WWMP 1999). Shivak (2001) and Linnel et al. (1997) stated, however, that the truth is that most predators that are relocated either return (even when displaced hundreds of miles), get into the same or worse trouble than they were already in, or die. Relocated wolves, after being taken out of their element, often die, either slowly by starvation, brutally by another pack or killed on a highway (Shivak 2001), and some resume depredation at the relocation site (Bangs et al. 1995). The rate at which repeated depredation problems would occur is likely dependent on the conflict potential at the release site and the area through which the relocated animal(s) traveled after release.

WS Implemented Lethal Control Methods

- **Euthanization** of problem wolves caught or restrained by leg hold traps, snares, or dry land restraint devices will normally be conducted with the use of appropriate type of firearm by trained personnel. This is the preferred method of euthanasia to reduce handling and stress to the animal. Euthanasia may also be accomplished through the administering of approved and authorized chemical euthanasia agents, such as sodium pentobarbital for properly immobilized animals. Lethal control can be used when: 1) there have been significant documented, confirmed losses at a site under the WWMP (1999), 2) the producer/owner has a signed depredation management plan (farm plan) for the property which includes damage abatement recommendations. 3) WS Specialists recommend euthanizing, and the WDNR approves.

- **Snares** may be used as either lethal or live-capture devices. Snares set to catch an animal by the neck are usually lethal, unless they are used as land restraint snares which can be used as live capture devices. Careful attention to details when placing snares and the use of a "stop" on the cable can also allow for live-capture of neck-snared animals. Spring-activated foot snares could be used to capture depredating wolves. Wolves captured by non-lethal restraint devices may be euthanized as described above.
- **Shooting** is selective for a target species and may involve the use of spotlights, night-vision, and predator calling. Removal of one or two specific animals by calling and shooting in the problem area can sometimes provide immediate relief from a predation problem.

Firearm use is very sensitive and a public concern because of safety issues relating to the public and misuse. To ensure safe use and awareness, WS employees who use firearms to conduct official duties are required to attend an approved firearms safety and use training program within 3 months of their appointment and a refresher course every 2 years afterwards (WS Directive 2.615). WS employees, who carry firearms as a condition of employment, are required to certify that they meet the criteria as stated in the *Lautenberg Amendment* which prohibits firearm possession by anyone who has been convicted of a misdemeanor crime of domestic violence.

- **Aerial gunning** typically involves the shooting of target animals from fixed-winged aircraft or helicopters, and is used on all lands where authorized and determined appropriate. Aerial gunning consists of visually sighting target animals in the problem area and shooting them with a shotgun from the aircraft. Shooting typically results in a relatively quick and humane death. Local depredation problems can often be resolved quickly through aerial gunning. Caine et al. (1972) rated aerial gunning "very good" in effectiveness for problem solving, safety, and lack of adverse environmental impacts. Smith et al. (1986) cited cost-effectiveness and efficacy as benefits of aerial gunning for protection of pronghorn antelope from coyote predation. Connolly and O'Gara (1987) documented that at least 55% of the coyotes taken by aerial gunning in their study area were confirmed sheep-killing coyotes. Wagner and Conover (1999) documented that aerial gunning conducted during the late winter months was effective in reducing sheep losses the following summer, and that it also reduced the need to deploy equipment such as leg-hold traps and snares, which are less selective than aerial gunning.

All aerial gunning operations are required to comply with WS Directive 2.260, the WS Aviation Safety Manual, and the WS Aviation Operations Manual. All aircraft, agency pilots, contract pilots and WS aerial gunners must be certified by the WS Aviation Manager. Aerial gunning would only be used on lands where it is authorized and determined by WS to be an appropriate method.

Good visibility is required for effective and safe aerial gunning operations and relatively clear and stable weather conditions are necessary. Summer conditions limit the effectiveness of aerial gunning as heat reduces predator activity, and visibility is greatly hampered by vegetative ground cover. High temperatures, which reduce air density, affect low-level flight safety and may further restrict aerial gunning activities.

SPORT HUNTING AND REGULATED TRAPPING

Sport hunting and regulated trapping can be and is part of the wolf conservation strategy to reduce local wolf/problems. However, wolves are currently classified as threatened species in Wisconsin and no sport hunting is allowed at this time, but regulation changes could occur in the future. Although WS does

not use sport hunting and regulated trapping, it would recommend it when and where appropriate. Hunters and trappers can provide a societal benefit by reducing local wild animal populations which can reduce damage.

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APPENDIX D

WOLF DEPREDAATION PLAN

GUIDELINES FOR CONDUCTING DEPREDAATION CONTROL ON WOLVES IN WISCONSIN FOLLOWING FEDERAL RECLASSIFICATION TO "THREATENED" STATUS.

By the Wisconsin Department of Natural Resources

May 20, 2002

The gray wolf was listed as Endangered by the Federal government in 1974, and listed as Endangered by the State of Wisconsin in 1975. Criteria have been met for reclassifying wolves to threatened status since 1997, and in 1999 the State of Wisconsin reclassified wolves to threatened status. The USFWS began the process to federally reclassify wolves in Wisconsin as Threatened in July 2000, and completed the process on April 1, 2003.

The WWMP (1999) prescribes how wolves should be managed in the state following Federal and State reclassification to Threatened status. The following, more specific, guidelines were developed by the Wisconsin Wolf Technical Advisory Committee²³ to determine appropriate depredation control activity when and while listed as a **Threatened Species** by the Federal government. These guidelines will need to be updated when wolves are federally de-listed.

Authority—Authority to control and manage problem wolves will be held by the WDNR, WS, USFWS, tribal agents on Indian reservations, and other Federal, state and tribal agents authorized by DNR and USFWS.

Definitions

Abatement—Techniques for reducing risk of depredation by creating exclusions, establishing barriers, or using scare devices.

Aversive Conditioning—Conditioning of animals to eliminate undesired behavior by associating such behavior with a disagreeable stimulus.

Chronic Farm—Farm with verified wolf depredation in two or more years in a 5 year-period.

Control—Attempt to capture or shoot problem wolves, and may include relocating, placing in captivity for study or research, euthanizing, or dispatching.

Depredation—Refers to predation on domestic animals.

Depredation Site—Location where depredation has occurred. On private land this includes contiguous property under the same ownership or lease of the affected landowner renter.

Dispatch—Attempting to humanely kill an animal in field situations.

Euthanize—Humane killing of an animal

²³ These guidelines will be reviewed annually with scientists and stakeholders, and will be revised as necessary.

Guard Animal----Use of one species of domestic animal to provide predator protection for another species of domestic animal, and may include guarding dogs, llamas, donkeys, and other animals. Guarding dogs are dogs specifically bred for the protection of livestock, and have historically been used for this purpose; specific breeds include Maremma, Shar Planinetz, Anatolian shepherd, Komondor, Great Pyrenees, Akbash, and various crosses of these breeds.

Significant Loss—The killing or maiming of one or more domestic animals by wolves where the imminent threat of attacks on additional domestic animals is apparent. For poultry or other small animals, loss of \$250 or likely to exceed \$250 would be considered a significant loss.

Verified Depredation—Depredation verified by trained personnel from an authorized agency, and defined either as **Confirmed**, clear evidence that one or more wolves were responsible, or **Probable**, sign strongly suggesting that one or more wolves were responsible.

Wolf Depredation Management Guidelines

Use of Aversive Conditioning or Other Non-Lethal Methods----

- a) Where appropriate, WS will offer suitable non-lethal alternatives
- b) Upon the first verification of depredation by wolves, a depredation management plan will be made for the farm, which will include recommended suitable nonlethal methods and other practices that may reduce depredation on the farm. A signed plan will be required before any control actions can proceed on any farm.
- c) If cost effective abatement is feasible, cost-shared abatements will be offered by DNR if money is available; DNR and WS will jointly determine suitable practices.
- d) A depredation management plan would be developed on farms before cost-share abatements are offered; DNR and WS will develop the plan in consultation with county and state livestock specialists.
- e) Experimental non-lethal abatement measures, such as the use of shock collars will be done by WDNR with consultation with WS; control trapping will normally not be conducted by WS in areas where WDNR is conducting experimental abatement measures.

Verifications Necessary to Begin Wolf Control —

- a) While wolves are listed as state threatened: On first time farms, consultation between WS and WDNR, and notification of Tribes will occur after the first depredation to determine the most appropriate action including removal or non-lethal abatement. Control may begin after two significant losses (second incident at least 1 day later) on first-time farms or one significant loss on a chronic farm in Zones 1, 2 and 3 (see map on page 4); trapping or shooting may begin after one significant loss in Zone 4 (lethal control only).
- b) Following state de-listing: Control may begin in any zone after one significant loss.

Determination to Begin Wolf Control —

- a) In Wolf Management Zones 1, 2, 3 and 4: On private land WS determines when trapping will begin, and will notify the local WDNR wildlife biologist or other WDNR representative, and WDNR will notify Tribes where appropriate, that trapping has begun.
- b) On public lands, WS, the local WDNR wildlife biologist or other WDNR representative, and the manager of the public land to be trapped, will jointly determine if trapping will occur on such land, and will notify affected Tribes.
- c) On private lands in Indian Reservations, and any area surrounding the reservation negotiated between Tribes and State: WS and WDNR will consult with the Tribe before trapping and dispatching of wolves.
- d) Trapping by WS on tribal lands will only be done if requested by the Tribe.

Maximum Distance Trapping Will Occur From Depredation Site:

- a) Trap up to 0.5 mile from depredation site in Zones 1 and 2.
- b) Trap up to 1.0 mile from depredation site in Zones 3 and 4.

Duration of Trapping at a Depredation Site---

- a) WS will use its discretion to determine trapping effort needed to effectively resolve depredation problems and will generally trap up to 10 to 15 days for first time depredation, and up to 21 days for chronic farms.

Treatment of Special Sex/Age Group---

- a) Prior to August 1, all pups will be released at site.
- b) On certain areas of highly suitable wolf habitat, the local WDNR wildlife biologist, after being notified by WS that depredation control trapping has begun, may request that lactating females be released nearby. Such actions would only be done with consultation with the affected landowner and if an effective abatement or aversive conditioning method is available to keep the wolf off the depredation site. Lactating females would not be released near chronic farms after June 15.

Treatment of Radio-Collared or Tagged Wolves---

- a) Radio-collared or tagged wolves will be treated as any other depredating wolf (dispatch or relocate as appropriate).
- b) Consult with tribal officials on any wolves that are clearly from an Indian reservation in areas near such reservations or near Indian lands.

Capture of Dogs or Wolf-Dog Hybrids---

- a) Dogs caught at depredation sites will be turned over to town chairman, dog owner, or animal shelters.
- b) Wolf-dog hybrids caught at depredation sites will be dispatched by USDA-WS or DNR.

Wolf Control on Depredation to Dogs---

- a) Control could be conducted on wolves killing dogs leashed, confined, or under the owners control on the owners land.
- b) No control trapping would be conducted on wolves killing dogs that are free-roaming, roaming at large, hunting, or training on public lands, and all other lands except land owned or leased by the dog owner.
- c) Other abatement and aversive conditionings will be considered on public lands where depredation occurs on dogs or other domestic animals.
- d) Guard animals would be treated as other domestic animals for verification and control purposes.

Wolf Control on Deer or Game Farms---

- a) Wolf control would be conducted on deer and game farms using the guidelines listed above.
- b) Normally trapping would only be allowed within the fenced area of the game farm, unless unusual circumstances makes it necessary to trap up to 100 yards beyond. Trapping outside fence areas would only be considered following additional consultation among WS, WDNR, and adjacent landowners.

Information Sharing-----

- a) WDNR will share radio locations of potential depredating wolves with WS
- b) WS will notify WDNR or Tribes of any research animals captured before euthanizing or dispatching.

- c) WDNR will notify landowners with wolf depredation problems, when radio-collared wolves are present.
- d) WDNR will share information with Tribes on wolves that travel onto Indian reservation lands.
- e) WS will turn all wolves euthanized at depredation sites over to the USFWS, who will normally turn these carcasses over to the WDNR or Tribes for final designation. Wolf carcasses will be used for research, education, and cultural purposes.
- f) WDNR will develop publications and educational materials on wolf depredation focused toward specific organizations or groups most affected by depredation by wolves.
- g) WDNR will provide press releases to explain lethal and non-lethal forms of control.
- h) WDNR will provide timely response to depredations with news releases.
- i) WDNR will cooperate with WS, and other organizations to test and research nonlethal methods of control including methods of exclusion, and aversive conditioning; results of such research will be published in scientific reports and in popular media.

